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SCHOOL HEALTH SUPERVISION
Section VII of Report of Committee on Municipal Health Department Practice, by Ira V. Hiscock, C.P.H., and W. T. Fales, C.P.H.

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SCHOOL HEALTH SUPERVISION*

(Section VII from the Forthcoming Report of the Committee on Municipal Health Department Practice.)

SCHOOL health supervision was first introduced in this country in Boston in 1894 in an attempt to limit the spread of communicable disease. With a similar purpose, Philadelphia followed suit in 1896 and New York in 1897. Now we find that this work, enlarged in scope, is generally recognized as an important part of the school and public-health program.

There are at least three fundamental reasons why a city should assume the responsibility for the conservation of the health of the children in its public schools.

First: To protect the community from the spread of communicable disease. The public school brings together a large number of children who are at a very susceptible age and it should, therefore, exercise active measures for the early detection of contagious disease. The possibilities of this original purpose of school health supervision, however, would not alone warrant our present expenditures for this activity.

Second: (a) To find and correct physical, mental and medical defects in the child before they affect his ability to learn and interfere with his school career. (b) When a community makes education compulsory, it must assume the responsibility for providing a healthful environment for the children. While many people still claim that it is not the duty of the state to supervise the personal health of each child, the writers believe that a community should exert every effort to create health conditions which give every child a fair chance and enable him to get the most out of the years he must spend at school.

Third: To educate the child in the principles of healthful living, so that he may himself have sound health and thus safeguard the community in the future.

ORGANIZATION

Medical inspection of children in the public schools is carried on in all of the 83 cities under study except Dallas, where it consists merely in visiting the schools upon request to determine cases of skin infection or communicable disease. This work is a function of the Health Department alone in 30 cities.[1]

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1. Baltimore, Buffalo, Chicago, Detroit, New York, San Francisco, Cincinnati, Denver, Indianapolis, Milwaukee, Portland, Rochester, Washington, Akron, Atlanta, Bridgeport, Cambridge, Fall River, Grand Rapids, Jacksonville, Lawrence, Louisville, Lynn, Memphis, New Haven, Norfolk, Providence, Somerville, Springfield, and Worcester.

of the Board of Education in 44[1] while in 7[2] it is handled jointly by the Health Department and the Board of Education. In Dayton the work was originally handled by the Board of Education but was taken over by the Health Department in October, 1920. Health Department control prevails in slightly more than half of the larger cities (58 per cent first group, 54 per cent second group); and amounts to only 30 per cent in the smaller cities.

Health supervision of children in private schools should also be mentioned, but in the present survey, our data only suggest that such work is apparently carried on in 22 cities, in 16 of them by the Health Department.

Health supervision of children in parochial schools is carried on in 42 cities (in two of them to a limited extent); in 35 by the Health Department, in 7 by the Board of Education.

COST OF SCHOOL HEALTH SUPERVISION

It has been possible to consider the cost of school medical inspection in 59 cities, in 37 of which the Board of Education has partial or complete responsibility for this work.

In Table I, we note that the cost per pupil for an enrollment of nearly four million in 59 cities amounts to 62 cents. This corresponds exactly with the average for the third group of cities, and is a trifle higher than in the largest cities but somewhat lower than the figure for the second group of cities. The difference, however, is not very great for the different groups.

On the other hand, if we analyze separately the appropriations for this work for 21 cities in which the Health Department has full control and for 32 cities in which the Department of Education is responsible, we find the figure for the latter nearly twice as high as that for the former (91 cents per pupil

TABLE I.
Expenditures for School Health Supervision, 1920

Cities of Population	No. of Cities	School Enrollment	Expenditures	
			Total	Cost per Pupil
500,000 and over	10	2,486,032	1,434,057	.58
250,000 to 500,000	9	532,346	418,559	.79
Less than 250,000	40	931,955	581,642	.62
All cities	59	3,950,333	2,434,258	.62

For an adequate program of school health supervision, all the children in the schools, private[3] and parochial as well as public schools, should be under observation; and it is hoped that coöperative measures will be taken by the different school and health officials to make such an important procedure possible. The Report of the Committee on School Health Program of the American Public Health Association[4] sets forth the fundamental activities and requirements and should prove helpful in planning a comprehensive program for any city.

1. Boston, Cleveland, Los Angeles, St. Louis, Jersey City, Kansas City, Mo., Minneapolis, Newark, New Orleans, Seattle, Albany, Birmingham, Camden, Canton, Columbus, Des Moines, Duluth, Elizabeth, Erie, Flint, Ft. Worth, Houston, Kansas City, Kans. (carried on chiefly by the Red Cross and V. N. A.), Lowell, Nashville, Oakland, Oklahoma City, Omaha, Paterson, Reading, St. Paul, San Antonio, San Diego, Savannah, Schenectady, Scranton, Spokane, Syracuse, Tacoma, Toledo, Trenton, Utica, Wilmington and Youngstown.

2. Philadelphia (financed by the Board of Education, supervised by the Health Department), Pittsburgh (under control of Health Department but Board of Education pays for physical examination of each child in public school once a year), Richmond, Hartford, New Bedford and Yonkers (Health Department's interest confined to control of communicable disease) and Salt Lake City (under control of Health Department but Board of Education pays for one part-time physician).

3. Official supervision may be limited to coöperative measures in cases where private schools have their own physicians.

4. American Journal of Public Health, Vol. XII, No. 3, 1922, p. 207.

as compared with 48 cents). The apparent difference in costs may be explained by the fact that the Board of Education sometimes included expenditures for activities not commonly included by the Health Department, such as physical education. Furthermore, in the case of the Health Department the school health supervision service is frequently under the Division of Child Hygiene and certain overhead expenses are charged to the maintenance of that division. Overhead charges average about 7 per cent of the total though they vary in different cities. In Cleveland, for example, they run as high as 18 per cent; whereas in New York they are only a trifle over 2 per cent. There are doubtless many other factors of even greater importance.

Again, the different cities vary considerably in the amount of money spent in this work. Seattle has the highest recorded figure for the cities studied in this connection. Flint with $1.80 per pupil has a higher cost than any other city of less than 250,000 population, Schenectady with $1.24 standing second. The cost per capita for these cities amounts to 14 cents for the cities in which the Department of Education is in charge of the work and 8.1 cents for the cities in which the Health Department is responsible. This last figure corresponds closely with the 8.8 cents per capita for 30 cities in which a specific budgetary allotment for school health supervision is included in the Health Department budget.

MEDICAL STAFF

a. *Chief Medical Inspector.* Seventy-one cities have a chief medical inspector, in 27 cases on full-time service. In nine[1] cities the health officer himself takes charge of the work. In some of the cities[2] the chief of this division is in charge of the Bureau of Child Hygiene and in that capacity is a whole-time employee of the city. Kansas City, Kansas has no medical inspector at all, the work being carried on by the Red Cross under the supervision of visiting nurses.

b. *Staff Medical Inspectors.* Staff medical inspectors are on a full-time basis in 12 cities only; 64 cities have medical inspectors on part-time, 17 having one or more on full-time as well. Columbus, Dallas, New Bedford and Kansas City, Kans. apparently have none. We have no information from three cities.

It seems to be a common practice, among the larger cities at least, to have one or two men serving whole time and a larger number giving only part of their time to school health supervision. St. Louis and Pittsburgh of the larger cities are exceptions to this rule, the former having 15 and the latter 35 whole-time medical inspectors and none on a part-time basis. The number of physicians varies considerably in the individual cities, depending largely upon the character of service and the amount of time given by each physician. In general, physicians are required to give from two to four hours for each school day; but in a few cities they must make a given number of physical examinations besides the regular routine inspection work. In Baltimore the medical inspectors are sometimes also engaged in communicable disease control (under the Health Department).

In 12 cities which employ full-time physicians for their work, the average number of pupils per inspector amounts to 7,407, or 1.35 inspectors per 10,000 pupils. Two cities of the first group, Pittsburgh with 3.07 and St. Louis with 1.40 have over four times as many physicians per 10,000 pupils as do the remaining 10 cities of less than 500,000 population. Of these 10 cities, three have less than .50 and seven have from .51 to 1.00 inspectors per 10,000 pupils. Pittsburgh has a rate of about 18 physicians per 100 schools. The figure for St. Louis is 11 and for the other cities less than 5.

1. Denver, Fall River, Grand Rapids, Indianapolis, Jacksonville, Louisville, Lynn, New Haven and Salt Lake City.

2. Akron, Baltimore, Bridgeport, Buffalo, Chicago, Cincinnati, New York, Pittsburgh and Providence.

NURSING

When school health supervision was first started the work was superficial and perfunctory. Examinations by physicians with the object of excluding children from the classroom without nursing care or follow-up proved, in the words of Miss Wald, "a doubtful blessing."

In order to meet this situation, in New York the Henry Street Settlement offered to place a nurse in the schools to show what could be done in securing the treatment of the diseases and defects found by the physicians. The success of the experiment was established in a month. The work of the nurses showed that, with the exception of the major communicable diseases, it was possible to keep the children in the classroom and under medical treatment instead of excluding them from school. As a result in October, 1902, New York City employed the first official school nurses.

In 1920 five[1] of the 83 cities under study had no official school nursing; while in Atlanta, Cincinnati, Jacksonville, Milwaukee and Salt Lake City school nursing was apparently done on the generalized plan. In 73 cities special school nurses were employed. We have analyzed the nursing personnel of 65 cities furnishing complete data on this question and find (see Table II) an average of 2.59 nurses per 10,000 pupils, or 3,861 pupils per nurse, the cities of less than 500,000 population being better provided than the larger cities.

TABLE II.
Nurses Engaged in School Health Supervision, 1920

Cities of Population	Nurses		
	Number of Cities	Total Number	Per 10,000 Pupils
500,000 and over	10	564	2.26
250,000 to 500,000	10	181	3.23
Less than 250,000	45	322	3.01
All Cities	65	1,067	2.59

Of these 65 cities, 15 have over 5,000 pupils per nurse; 28 have from 3,300 to 5,000 pupils per nurse; 12 have from 2,500 to 3,300 pupils per nurse and 10 have less than 2,500 pupils per nurse. (Boston, Cambridge and St. Paul have 2,000–2,500; Albany, Bridgeport, Des Moines, Minneapolis, Omaha and Seattle, 1,400–2,000; and Schenectady, 1,300). In only one of the 54 cities (Minneapolis) supplying these data do we find even one nurse for two schools. A nurse in 30 cities handles over five schools, from 2.5 to 5 in 19; and in four (Bridgeport, Newark, Omaha and Schenectady) from 2 to 2.5.

Although the smaller cities are better supplied with school nurses than the larger ones, even they do not measure up to the standard of one school nurse for every 2,000 pupils enrolled. According to this standard, we find that our cities as a whole have only about half the number of nurses necessary if adequate service is to be rendered.

SPECIALISTS

Only four cities, Buffalo, Kansas City, Mo., Des Moines and Spokane employ specialists on a whole-time basis and comparatively few, 19, on part-time. Frequently one or more of the medical inspectors may be interested in special lines of medical examination, but few cities employ expert diagnosticians. This service is generally rendered through the coöperation of clinics, especially tuberculosis clinics. A few of the cities employ oculists regularly. The discussion regarding the employment of dentists will be taken up later in this chapter under the heading "Dental Work."

PHYSICAL EXAMINATIONS

a. *Examinations upon Admission.* Admission examinations are of three general types: (1) A complete physical examination; (2) A more or less thorough inspection of each child designed to detect obvious physical defects requiring correction; and (3) an exami-

1. Dallas, Denver, Fall River, Nashville and Oklahoma City (furnished by Cooperative Nursing Association).

nation merely for detection of communicable disease.

The usual practice in school health supervision in the large cities is to give an examination upon admission of the child to school with subsequent examinations during the year or at intervals during the school life. In some cases the initial examination is the only one given; but in the smaller cities of our study this admission examination is waived and a routine examination of varying scope and completeness is given at intervals. A physical examination is given upon admission in 51 cities. In 38 cases, this is a general physical examination, in 6 an examination for the detection of communicable disease; in 7 the scope of the examination is not clearly specified.

In the first group, eight[1] cities have complete physical examinations; while in two cities, Buffalo and Pittsburgh, examination for the detection of communicable disease only is made. All children are not examined on admission in Baltimore, but regularly after admission. For Los Angeles we have no data on this question. Where complete physical examinations are given the medical inspector makes the examination assisted by a nurse who often takes the measurements and enters the data on record cards.

Four cities[2] of the second group specify a complete physical examination at entrance. Five cities[3] indicate that no admission examination is given; while Kansas City, Mo. and New Orleans have a general inspection by the nurse who refers special cases to the medical inspector for examination. Rochester is supposed to give an admission examination but does not specify the scope of it; for Newark we have no data.

Among the smaller cities of our study, 14[4] have complete physical examinations. In Des Moines, Providence and Yonkers the children are stripped to the waist for this examination. In 12 cities,[5] the examination is made chiefly for the detection of physical defects of the eye, ear, nose and throat, and does not seem to be as complete as that in the above cities. In Akron, Albany, Houston and Norfolk, the examination is made at the beginning of the school year for signs of communicable disease. Of the remaining cities, four[6] give admission examinations but we have little data as to their scope; Omaha and Reading give general physical examinations during the first year; and 22[7] cities apparently give no examinations upon admission to the schools.

b. *Subsequent Examinations.* Examinations subsequent to admission are of three types:

1. Complete physical examinations three times during the school life of the child, usually in the first, third and fifth or sixth grade.

2. An attempted physical examination every year of school life. Because of the inadequate staff no city is able to give a thorough physical examination every year to all pupils. In many of the cities, therefore, where this effort is made, the examination is reduced to a very rapid, casual inspection of the children. This results in the detection of pronounced physical defects only and does not find such cases in their incipiency.

3. No attempt at a regular physical examination of the children but instead classroom inspections by the nurse or teacher for the detection of communicable diseases and physical defects; suspected cases being referred to the medical inspector for examination. Frequent examinations of classrooms for the detection of communicable disease are held in those cities in which complete physical

1. Boston, Chicago, Cleveland, Detroit, New York, Philadelphia, San Francisco and St. Louis.
2. Cincinnati, Jersey City, Milwaukee and Seattle.
3. Denver, Indianapolis, Minneapolis, Portland and Washington.
4. Cambridge, Camden, Des Moines, Duluth, Elizabeth, Erie, Grand Rapids, Louisville, New Bedford, New Haven, Providence, Schenectady, Utica and Yonkers.
5. Birmingham, Dayton, Fall River, Flint, Fort Worth, Kansas City, Kan., Memphis, Paterson, Richmond, Spokane, St. Paul and Syracuse.
6. Jacksonville, Scranton, Somerville and Tacoma.
7. Atlanta, Bridgeport, Canton, Columbus, Dallas, Hartford, Lawrence, Lowell, Lynn, Nashville, Oakland, Oklahoma City, Salt Lake City, San Antonio, San Diego, Savannah, Springfield, Toledo, Trenton, Wilmington, Worcester and Youngstown.

examinations are made three or four times during the school life of the child.

We find that four of the cities of the first group, New York, Chicago, Cleveland and San Francisco have examinations either every other year or three times during the school life of the pupil. In Baltimore the medical inspector gives a complete examination in the first and fourth grades, while in the second and third, the nurse picks out pupils with physical defects. Pittsburgh and Boston attempt an examination of every child once a year and in Philadelphia, Detroit and St. Louis examinations are made even oftener. In Detroit[1] the examination is made every three months by the nurse, who especially examines the throat, skin and head of the pupil. Philadelphia reports a complete physical examination of each child once every term.

Of the second population group, Milwaukee and Kansas City, Mo. have examinations every two years. Minneapolis is about to accept the plan of having examinations every three years. Yearly examinations are made in Newark, Cincinnati and Jersey City, while in Indianapolis, Seattle and New Orleans (which has a general inspection only) they are more frequent. In Washington there is no routine physical examination but suspicious cases are noted by the teacher and sent to the medical examiner.

In 11[2] of the smaller cities, examinations are made either every other year or three times during the school life. In two of these, Omaha and Des Moines, the nurse makes the examination but in all the others it is made by the medical inspector. In Albany there is a complete physical examination only once in 4 years but inspections are made monthly and superficial examinations made annually. Yearly examinations are made in 24 cities[3] in 7[4] of which the examinations are made by the nurse. Examinations are more frequent than once a year in 11 cities, New Haven, Dayton, Scranton, Paterson, Youngstown, Camden, New Bedford, Spokane, Kansas City, Kans., Houston and San Antonio. In the last 5, examinations are made by the nurse. Birmingham and Duluth stated that examinations were made by the medical inspector at any time upon the request of a teacher, but that no regular physical examination of all children was attempted.

In the cities of the third group particularly, the purpose of the examination determines its frequency. In those cities in which it is given less than once a year it is a complete physical examination. About 50 per cent of the cities giving an annual examination attempt a complete physical examination and the other 50 per cent seek only to detect obvious physical defects, such as enlarged tonsils or defective eyesight or hearing. Where the examination is given oftener than once a year, for instance once a term, it is usually for the purpose of detecting obvious physical defects. But when it is given monthly or weekly it aims merely at the detection of communicable disease.

c. *Control of Communicable Disease.* The questionnaire did not request specific information concerning the control of communicable disease in the schools. Many of the questionnaires, however, returned data on this very important subject. There seem to be three methods used for the detection of communicable diseases among school children:

1. Rapid classroom inspection by the school nurse at regular intervals or in some cities, only during times of increased prevalence of certain diseases.

2. Visits by the school nurse to all children absent three or four days or longer. In these cases the child is usually required to present a certificate signed by

1. This city is now testing a new plan of having the teachers make preliminary examinations of the pupils, school medical inspectors checking only those referred to them by districts.
Palmer, George T. A New Venture in School Medical Inspection. American Journal of Public Health, Vol. XII, No. 7, 1922.

2. Providence, Omaha, Bridgeport, Grand Rapids, Des Moines, Albany, Cambridge, Utica, Canton, San Diego and Richmond.

3. Toledo, Louisville, Jacksonville, Akron, Atlanta, Worcester, Springfield, Fall River, Nashville, Norfolk, Lowell, Reading, Lynn, Erie, Somerville, Oklahoma City, Schenectady, St. Paul, Oakland, Hartford, Tacoma, Flint, Trenton and Elizabeth.

4. Last seven in note 2.

the medical inspector, Board of Health or school nurse before readmission.

3. Visits to each school daily or every other day by the medical inspector or nurse, who examines any children sent to the office by the teacher. The arrival of the medical inspector is often announced by the ringing of special signals throughout the building.

To be complete and effective, supervision of communicable disease in the public schools demands that all these procedures be followed, the particular practice to be used at any time depending upon the individual circumstances of the case. No system of communicable disease control can be complete or effective without the active coöperation of the teacher and the detection and prompt exclusion of the cases in her classroom. Only a few of the cities under observation appear to be making an effort to detect communicable disease at the beginning of the school year.

DENTAL WORK

The aims of dental hygiene work in schools may be summarized briefly as follows:

1. To instruct the child in necessary prophylactic care of the mouth.

2. To place the child's mouth in as good a condition as possible by performing the necessary extractions, fillings, etc.

3. To emphasize the importance of proper dental and oral hygiene in their relation to sound health.

In order to secure this service it is necessary to have dentists in the employ of the school medical service and sufficient facilities for doing the necessary corrective work. We find that 54 cities employ dentists; in 20 instances some or all of them are full-time employees.

In 16 cities, where all the dentists are on full time, we find a total of 46, giving an average of one dentist for 23,000 pupils. Eleven cities of less than 250,000 population showing the best provision in this regard have one dentist for 15,000 pupils.

Dental clinics are maintained in 31 cities. Several of the cities have portable outfits which allow the dental clinic to be moved from one school building to another. In the majority of the cities the facilities for correcting dental defects are available only to the poor. Whereas, a large percentage of the children in our schools cannot afford the services of a private dentist, more and better facilities for corrective work should be available to those who are able to pay small fees. Many parents object to sending their children to clinics maintained only for the poor. A few cities, notably Bridgeport and Grand Rapids have dental divisions in the health department which do extensive work. In general, it may be said that the scope of the dental work in the majority of the cities consists of examinations for dental defects of all children and the extraction, cleaning and filling of teeth for indigent children. In a few cities the work is on a systematic basis, the children of the first three grades of school are carefully examined for defects and the nurse follows up such cases to see that the corrections are made.

NOTIFICATION AND FOLLOW-UP

To have his physical defects discovered is of little value to the child unless he can also have them remedied. The general practice among the cities is to notify the parents of any defects that should be corrected. A special slip specifying the defect and stating the importance to the child's health and future life of correcting it, is usually sent to the parents. They are urgently requested to take up the matter with the family physician or, in case there is no family physician, to refer the child to the public clinics. In Columbus, this notice consists of verbal instruction to the child, who informs the parents of the defects found.

In most of the cities (70), these notices are followed up by the school nurse who usually visits the home and urges the correction of the defect. If the family physician has not been consulted, the

nurse then offers to take the child to some clinic with facilities for handling that particular defect. In a few cities where the parents refuse to take any action or allow the child to be taken to the clinic, the school authorities have summoned the parents to court on charges of neglecting the welfare of their child. Two cities, Camden and Buffalo, reported that the notification slip stating the measures taken to correct the defect had to be signed by the parent or physician. As soon as action was taken, the nurse followed up the case.

SPECIAL CLASSES

It is well recognized that children are often found in school working under such definite handicaps that they would make better progress, mentally as well as physically, if placed in special classes. The following table indicates the number of cities making some provision for different types of special classes in our larger cities. Forty-two cities report open air classes. The number of such classes is undoubtedly greater, since no specific question about this matter was asked in the questionnaire. Special classes for crippled children and those with defective hearing are also reported in a very few instances.

TABLE III.
Special School Classes in 83 Cities, 1920

CITIES OF POPULATION	MENTAL DEFECTIVES	VISUAL DEFECTIVES	POSTURE	NUTRITION
500,000 and over				
Number having classes	10	7	8	7
Number giving no data	2	1	1	1
Number having no classes	0	4	3	4
250,000-500,000				
Number having classes	5	4	7	7
Number giving no data	4	2	2	2
Number having no classes	4	7	4	4
Less than 250,000				
Number having classes	38	11	22	31
Number giving no data	5	4	5	3
Number having no classes	15	43	31	24
All cities—total				
Number having classes	53	22	37	45
Number giving no data	11	7	8	6
Number having no classes	19	54	38	32

This table merely indicates the cities having one or more classes for a particular type of abnormality, and it is recognized that in most cities the number of special classes is far from adequate. When we realize that many cities make absolutely no provision for backward children, or those whose eyesight or hearing are subnormal, or who are otherwise not physically up to the mark, we see the crying need of a definite programme of school hygiene in American communities. This is especially necessary in view of the fact that many children are not even given a thorough physical examination three times during their school life and that many important cities do not approach the minimum standard. Something radical ought to be done to remedy this state of affairs.

SCHOOL LUNCHES

Lunches are furnished in some of the school buildings in at least 72 of the cities studied. In 36 of the cases these are supplied by the school or Department of Education; in 23, by private agencies (as Mothers' Clubs, etc.); and in 11 by both agencies. There are no data for 2 cities. In Albany, Cleveland, Flint, Jacksonville, Reading, and Utica the lunches are furnished free of charge; while in most of the other cities a cost charge only is made for those children who are able to pay. From a study made in Detroit[1] it appears that about one-third of the children gain in weight if educational means alone are employed; whereas about two-thirds will gain if a hot lunch is served at noon.

CORRECTION OF DEFECTS

One of the first real advances in school health work came in New York City in

1. Palmer, George T. Detroit's Experience with Undernourished School Children. A. J. P. H., Vol. XII, No. 2, 1922. (This paper outlines a plan by which the nutrition work in the city is centralized, and yet each organization retains a measure of independence.)

1905 when physicians began to make examinations in order to determine physical defects and obtain necessary surgical care. This soon became a prominent feature of the work in many cities. According to Dr. Baker[1] about 35 per cent of the children of school age have one or more physical abnormalities such as malnutrition, defects of hearing, lung disease, hypertrophied tonsils, adenoid growths or defective vision. In this 35 per cent are included those who may have defective teeth associated with one or more of the other defects mentioned.

In order to have a complete medical history of the child throughout his school life and to evaluate in some way the work performed, it is essential that careful records of examinations together with all other information be kept on individual record cards. Sixty-two of the 75 cities reporting state that such records of the physical condition of a pupil are kept, but the incompleteness of these cards, in many cases, leaves much to be desired. In many cities there are two cards, one for the elementary grades and one for the high school.

The school authorities usually furnish the facilities for dental work and less frequently conduct eye clinics. Children who cannot afford the services of a private physician are referred to health department clinics and hospital dispensaries for all other work. Hardly a city is without some public or private facilities for the care of these children; but in the cities of less than 250,000 population, these facilities are generally available only for indigent cases.

The effectiveness with which defects were corrected varied greatly in the different cities. Very poor records are kept as to the number of defects found or the number remedied. Several cities specifically state that the cards recording defects and the action taken to remedy them had not been tabulated and, therefore, they were unable to furnish the data requested. The data obtained from 36 cities, however, indicate that for 1,058,983 total defects found in one year, 345,616 defects (33 per cent) were remedied. Fourteen of these cities report less than 25 per cent, 16 report from 25 to 50 per cent, and 6 report over 50 per cent (Camden 58 per cent, Norfolk 63 per cent, Providence 55 per cent, Springfield 72 per cent, St. Paul 88 per cent, and Utica 83 per cent) of the defects were remedied. As an official in one of the cities pointed out, however, these figures are not reliable, since the defects remedied necessarily bear no relation to the number found but are cases examined and recorded in previous years.

The detailed data from 21 cities indicate that 31 per cent of the defective teeth cases, 57 per cent of the defective eyesight cases, 34 per cent of the defective hearing cases, 31 per cent of the diseased tonsil cases, and 35 per cent of the enlarged adenoid cases were remedied.

PHYSICAL EDUCATION AND TEACHING OF HYGIENE

It would seem, from a study of the data contained in our questionnaires, that very few cities have a definite program either for physical education or the teaching of hygiene in the schools. Some of the cities merely state that they meet the requirements of the state law. Apparently all of the cities of over 500,000 people have physical education in the schools, the majority providing at least one or two hours a week for this work. Half of these cities devote an hour or more a week, in some grades, to the teaching of hygiene. This important subject is taught either by the school nurse or the regular teacher.

Fifty-five of the 63 cities of less than 500,000 population furnishing data, report that physical education forms a part of their school work, 41 of them spend over an hour a week, usually two or three periods on this subject. All but three of the 59 cities reporting spend

1. Baker, S. Josephine, M.D., D.P.H. School Health Supervision Based Upon Age and Sex Incidence of Physical Defects. A. J. P. H., Vol. XII, No. 6, 1922.

some time in teaching hygiene; 30 of them allow an hour or more each week for this purpose. In Birmingham an hour daily is devoted to each of these activities. In Toledo, all grades have one recitation per week and one physician gives half a day each week in thirty minute talks to various classes. In Albany, a setting-up drill is held during the last period; half an hour a day is given to physical education; with a minimum of one hour a week for recreation. A regular half year course in hygiene taking 30 minutes a day is given and about ten minutes a day additional is spent in health clubs. In general, our reports indicate that a greater amount of time is spent in teaching hygiene in the smaller cities than in the larger ones.

SUMMARY AND CONCLUSION

1. School health supervision in public schools is carried out in over half the cities of over 250,000 population by the Board of Health; but this work is handled in over two-thirds of the smaller cities by the Department of Education. In seven cities, both departments are more or less active in this work; and in at least twelve other cities in which the Department of Education controls the work in public schools, the Board of Health inspects children in parochial schools. Apparently there is no parochial school inspection in 41 cities, while the situation in private schools is even more serious.

The cost per pupil of school health supervision in 59 of the cities studied amounts to 62 cents; for 21 cities in which the Health Department has full control, to 48 cents; for 32 cities in which the Department of Education is responsible, to 91 cents. As far as we are able to judge, the work in the schools where the Health Department has charge is fully as effective as that in the other schools.

For economy of service and simplicity of organization, school health supervision should be controlled by one administrative department. Whether this be the Health Department or the Department of Education is of less importance than the assurance that the work shall be done efficiently. In an ideal plan, one director should be responsible for the organization of the division and the coördination of all health services so that the different phases of the work, such as (a) medical inspection, (b) physical education, (c) sanitary supervision, and (d) the teaching of personal hygiene, would be unified and centralized. Through this means the undesirable conflict of authority would be eliminated and a broader and more constructive program devised. This should include all children—those attending the parochial and private schools—as well as public school pupils. Obviously, one group of school children needs supervision as much as another and through coöperation this should be made possible. A plan of this character would undoubtedly result in a more efficient personnel and a substantial financial saving.

2. Twenty-seven cities employ a full-time chief medical inspector, while in eight others the director of this work is a full-time employee of the department who gives only part of his time to school work. Staff medical inspectors are usually on part time; in 12 cities which employ full-time physicians we find 7,407 pupils per physician. For 65 cities we find an average of 3,861 pupils per nurse; only 10 of these cities having less than 2,500 pupils per nurse. Specialists are employed in 23 cities, in only 4 on a whole-time basis. Dentists are employed in 54 cities; in 20 cities one or more dentists serve full time.

The medical and nursing staff is generally inadequate for the most effective work. The qualifications for the position of chief medical inspector of schools should be standardized and designed to attract physicians with special training to serve full time at a suitable salary. Furthermore, sufficient personnel should be provided to allow one doctor to every 3,000 children and one nurse to about

2,000 children, in addition to an adequate staff of dentists and specialists. Sufficient clerical assistants to relieve the physicians and nurses of routine work should be furnished, thus permitting the nurses to spend half of their time in the important follow-up work and in consultations with mothers in the homes and at the schools.

3. Physical examinations are given on admission in 51 cities; but in only 38 are these general physical examinations. Subsequent examinations are given in 68 cities. In about one-third of the cities, examinations are said to be given as often as every two years. From the data of 30 cities it would appear that about 33 per cent of all defects found are remedied.

Dental clinics are maintained in 31 cities. There is need for more dental clinics in the schools and an adequate staff of oral hygienists.

Thorough physical examinations should be made at least three times during the school life. Complete and careful records of the physical condition of each child should be kept. Better follow-up work and individual conferences and personal talks in the homes should be instituted.

4. The lack of special classes for handicapped children is apparent when we note that at least 54 cities have none for visual defectives, 38 have none for posture, 32 have none for undernourished children, and 19 have none for mental defectives; while only a few special classes of other types are found.

All cities should have special provision for children with tuberculous, cardiac, or nervous affections; as well as for those having defective sight, hearing, posture or other physical handicaps which would interfere with their progress. Standards covering the type of child to be admitted to special classes would also prove helpful. Additional health departments should provide special lunches for school children who require wholesome nourishment.

5. Most of the cities have some form of physical education in the schools but few have an adequate program. This is recognized as an important part of the school health campaign and should receive greater attention under the supervision of a trained personnel.

6. All of the larger cities and all but three of the 59 cities of less than 500,000 population for whom data were available, report that some time is devoted to teaching hygiene. This is usually limited to special grades, however, and is seldom systematized nor does the curriculum generally provide more than an hour a week for this subject.

We believe that one of the best means of imparting health education to the community and of health building for the future is through the development of a hygienic conscience in school children. This can only be done through organized, consistent education by teachers, nurses and physicians.

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The Doctor Sofie A. Nordhoff-Jung Cancer Research Prize.—Dr. Sofie A. Nordhoff-Jung of Washington, D. C., has founded an annual prize of five hundred dollars bearing the title of "*The Sofie A. Nordhoff-Jung Cancer Research Prize*". This prize is destined for the encouragement of researches in the etiology, prevention and treatment of cancer. It will be awarded by a commission, composed of members of the University of Munich, Bavaria, and be granted for the first time in December of the year nineteen hundred and twenty-three. The commission consists of Professors Borst, Doederlein and Sauerbruch with Professor von Romberg as chairman. This body is empowered to elect successors. The award will be made as a recognition of the most conspicuous work in the world literature bearing on cancer research, done at a time antecedent to the allotment of the award. Though the prize will not be awarded on a competitive basis the commission invites all research workers in cancer to submit literature on this subject.

OBSERVATIONS ON THE VIABILITY OF THE BACTERIUM COLI GROUP UNDER NATURAL AND ARTIFICIAL CONDITIONS

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Read before the Laboratory Section of the American Public Health Association at the Fifty-first Annual Meeting, Cleveland, October 19, 1922.

THE dry summer of 1916 afforded an opportunity for certain observations in the State of Kansas, which explained many of the apparent anomalies existing between sanitary surveys and the bacteriological examinations of samples of water. At Lawrence, Kansas, there were 72 days without any precipitation. Other localities recorded as many as 93 days without any rainfall. Certain water-supplies that were credited with being polluted by superficial soil washings, whenever it rained, were found to continually return positive results for organisms of the colon group. This single observation was freely and frequently discussed by members of the staff of the Kansas State Board of Health. As a result of this, certain preliminary studies were made which led to a series of experiments. Practical field demonstrations and theoretical laboratory studies were made in an attempt to prove the apparent fact that organisms of the colon group under certain natural conditions would multiply and thereby fail to be an indicator of contamination of recent fecal origin.

During the years after this investigation started, the war made many changes for the individuals working on the problem. Necessarily, much of the numerical data was lost so that this paper cannot be a truly scientific presentation of the problem. It is in reality a series of notes all tending to show that there are certain conditions of temperature, food supply and moisture, which will permit organisms of the colon group not only to live for a long time but grow and multiply in both soil and water.

Observation No. 1. During this period of drouth, cracks were observed to open up in clay soil on the hillsides. These were in some instances four to six inches across the top. A nine-foot "fly rod" was used to measure the depth and at two or three points the cracks would admit the rod to full length. How far beyond this point the hair line cracks extended, we were unable to determine. Undoubtedly earth worms and boring insects would make burrows very much below these points and without doubt carry organisms of the colon group from the surface soil well down into the water strata.

A recent report from Williamston, Michigan, stated that a crayfish burrow left an opening ¼ inch in diameter from the surface of the ground 46 feet to water, the crayfish having burrowed through a layer of shale. This was discovered by a well digger who followed the burrow up to the surface. This statement was investigated and substantiated by one of us.

With the fact in mind that there was ample opportunity for surface soil to be carried down to the water strata that were not thoroughly protected by an impervious shale, sand stone, or other rock layer, Mr. Edman Greenfield proceeded to collect samples of soil from various locations in and about Lawrence, Kansas, which were apparently free from recent animal or human pollution. Only one sample of soil out of 25 failed to return some organisms of the colon group, and that was the freshly stripped shale bed of the Lawrence Brick Company.

Observation No. 2. McCook's Field Well. A point was selected on the campus of the University of Kansas where there was no source of contamination on the watershed. A 2-inch test well, 52 feet deep, was drilled and a pump installed. This well was so constructed with a double casing and concrete apron that if it did rain surface pollution would not be carried down the casing. Naturally the first pumping of this well contained organisms of the colon group. The well was pumped dry and the casing filled with 1 per cent chloride of lime solution and allowed to stand several days. The first water pumped was sterile, containing free chlorine. By the time the well had been pumped free from chlorine, organisms of the coli group reappeared in 1 c.c. portions, and were continually present in the water. This experiment was repeated several times with the same result. The organism recovered was classified, according to Levine,[1] as B. coli of fecal origin.

Observation No. 3. The McNish Well. The city water supply was so depleted during the period of drouth that it was necessary to draw a supply from the Kaw River for fire protection. The water was heavily chlorinated and consequently unfit for domestic use. Mr. McNish, owner of the only distilling plant of the town, could not supply the demand for drinking water. He submitted the proposition to the Department of Health that a well on the high prairie three miles west of the town be used. The bottom of this well was above any source of pollution except the surrounding soil, which could not, by any stretch of the imagination, be dangerous to human beings. This well always showed organisms of the colon group in 1 c.c. samples. The same disinfecting experiment was carried out with this source of supply that was carried out with the McCook field well. In every instance as soon as the water pumped was free from chlorine the organisms of the colon group appeared in 1 c.c. specimens. The organism recovered was Bact. Aerogenes, probably not of fecal origin.

Observation No. 4. Potter Lake. This was a small artificial lake on the campus of the University of Kansas which was sometimes used as a bathing pool. On account of the enormous growth of algae, diatomes and crustaceans, it was not fit for this use during the period of drouth. Periodic examinations of the lake showed that at times it was practically sterile and at other times there were organisms of the colon group present in the water. It could easily be observed that the algae, protozoans and other life developed and died off in cycles. Although we were unable to get any definite correlation between the disappearance of the various types of organisms and the appearance of B. coli, yet it was suggestive that these organisms furnished a pabulum for the growth and development of colon bacilli.

Observation No. 5. Humboldt Filter Plant. One of the duties of the laboratory at this time was to run the official test for efficiency on the new filter plants. The Humboldt plant had been in operation some time but had not been officially approved by the engineer of the State Board of Health. In running this official test it was observed that there was a heavy growth of Daphnia on the beds. It was impossible to get a colon free effluent, although all factors in the filtration were being properly controlled. One of the beds closed down at night showed the presence of the colon group in 10 c.c. samples. The effluent on starting the plant the next morning showed the presence of the colon group in 1/1000 of a c.c. and the surface of the sand was coated with dead crustaceans.

Observation No. 6. Osage River. During this period of drouth the Osage river was pooled, the entire run-off coming from the stored ground water. One collecting reservoir which was observed daily showed that the number of B. coli

1. Max Levine. Jr. Bact., 1916, p. 153.

varied from 1/10 of one organism per 1 c.c. to 10 organisms per c.c.

Observation No. 7. Soil Experiment. A galvanized iron tank 3 feet square by 3 feet deep was equipped with under drains and filled with soil collected from a spot on the campus that was not obviously contaminated. This tank was installed on top of Frasier Hall, the highest building on the campus, protected by a screen cone and an anemometer, so that birds could not possibly roost on the tank. The Weather Bureau anemometer on the same tower recorded only one instance where there was not sufficient wind to keep the anemometer moving. At the time the tank was installed late in the summer of 1916, the soil was very dry. The organisms of the colon group were present. Both the so-called soil and fecal strains were isolated. As our attention was focused on the fecal strains, we retained a record of the cultural characteristics of the organisms recovered: short gram negative rod, methyl red positive, Voges Proskauer reaction negative, gelatine negative, dextrose positive, lactose positive, saccharose negative, adonite negative, dulcite positive, indol positive.

In late September or early October, 1916, there was a period of heavy rainfall. The soil became saturated with water. At least six attempts were made to isolate the fecal strains of colon at that time, only two of which were successful, the organisms being masked by an overgrowth of B. fluorescens liquefaciens. Later in the fall there was another short dry period and we were able to isolate the fecal strains of B. coli in large but varying numbers, the fluorescent group practically disappearing.

The number of colon bacilli per gram of soil diminished during the freezing weather to a point where it was not possible to recover the organism in less than 10 grams of soil. With the early spring rains of 1917 the organism was completely overgrown for a period by the growth of fluorescent bacilli. During the first dry spells of June and July, we were again able to isolate the so-called fecal strains of colon bacilli in large numbers.

Specimens of soil were periodically examined for B. coli of fecal origin until the summer of 1918 when all thought of this work was laid aside. As neither of the authors returned for any length of time to the University of Kansas after discharge from service, no continuation of the study was attempted until recently. When the tank was removed from the top of Frasier Hall in July, 1922, Mr. W. R. Schreiner, Bacteriologist for the Water Survey Laboratories of the Kansas Board of Health, sent a sample of soil to Young at Lansing. Organisms of the colon group subscribing in every detail to the cultural characteristics of the original organism present in the soil were isolated from 1/100 of a gram of soil.*

LABORATORY EXPERIMENTS STARTED SEPTEMBER 1916, ENDED JANUARY 1918

Two sets of salt mouthed bottles were filled with 200 grams of garden soil in each. One set, "A", was sterilized with dry heat and the other set "B" was air dried. All had cotton stoppers. Each bottle was inoculated with 1 c.c. suspension of B. coli, the suspension made in isotonic salt solution. One-half with a soil strain and the other with a fecal strain. The moisture content was so adjusted that each strain was in soil held at 100, 60, 40, 20, 10 per cent saturation, adjustment being made each month.

SET "A" (STERILIZED)

100% Saturation. B. coli, both soil and fecal strains dropped rapidly at end of two months found only in 2 grams soil. At end of 1 year not found in 10 grams soil.

60% Saturation. B. coli content dropped rapidly, fecal strains more

* On March 9, 1923, organisms of the colon group were isolated from residue of this sample of soil.

rapidly than the soil strain. Both strains isolated from 10 grams soil in January, 1918, seventeen months after the experiment was started.

40, 20, and 10% Saturation. B. coli content dropped slowly with no apparent difference between soil and fecal strains. Both isolated from 1 gram soil January, 1918.

SET "B" (UNSTERILIZED)

100% Saturation. After the first month it was impossible to isolate B. coli that corresponded with the strains originally added. The soil soured and became overgrown with moulds. The organism predominating was B. fluorescens liquefaciens.

60% Saturation. B. coli content dropped rapidly. At the end of two months no organisms conforming to the original strains were isolated from 10 grams of soil but at the end of eight months the original cultures were isolated from 10 grams of soil. They were not isolated again during the time of the experiment.

40, 20, and 10% Saturation. At the end of the first month the B. coli content, both soil and fecal, had dropped. At the end of the third month there were more organisms per gram than when started. The number of the soil strains being the larger. During the entire period the B. coli content varied from month to month, the soil strain tending to run the higher.

In July, 1919, when one of the authors returned to the University of Kansas for a short time, two or three bottles of this set were found, all the rest were lost. The moisture content had not been adjusted so that all were very dry; however, both the soil and fecal strains of the colon group were isolated from 10 grams of the specimen.

SUMMARY

While the authors of this paper in no way believe that conclusions can be drawn from these observations depreciating the value of the presumptive and confirmatory tests for B. coli as an indicator of pollution, yet we do believe that these results point very definitely to conditions which will permit any of the colon group to become saprophitic and that this fact must be given serious consideration in judging the quality of a water-supply. Further, we believe that the differences between soil and fecal strains is of little practical significance to the sanitarian, and will not help him in judging as to the proximity of the source of contamination.

Certainly a ground water to be safe should be free from B. coli just the same as it should be free from great numbers of any soil organisms. But without doubt, unwarranted condemnation of farm water supplies are being made every day based on the presence of lactose fermenting bacteria.

This then is a plea for more efficient, sanitary and biological surveys before judging the potability of a water-supply, or the efficiency of any method of purification.

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DR. F. F. RUSSELL SUCCEEDS DR. WICKLIFFE ROSE

Dr. Wickliffe Rose on March 1 tendered his resignation as General Director of the International Health Board to accept the presidency of the newly incorporated International Education Board and of the General Education Board, which latter office was made vacant by the retirement of Dr. Wallace Buttrick to become chairman of that Board.

Dr. Frederick F. Russell, formerly director of the Board's public health laboratory service, has succeeded Dr. Rose as General Director of the Board.

A PROPOSED STANDARD FOR STATE VITAL STATISTICS

L. E. Ross
State Registrar, Sacramento, California

EVERY state bureau of vital statistics performs two distinct functions. The first is the receipt and proper custody of the legal records of births and deaths, and in many cases marriages and divorces. The second is the compilation of vital statistics for the use of those who may need them.

Probably the primary function is the custody of these legal records and the furnishing of official copies of them when required by individuals. This is a service rendered direct to the public and is purely sociological in character, affecting the social and legal status of citizens. The other function—the compilation and publication of statistics—bears principally upon the public health. Although instances are not lacking to illustrate the extensive use of vital statistics in matters having no relation to public health the information is more continuously and generally used by sanitarians than by any other class of workers.

It follows that the compilation of vital statistics should meet the requirements of public health. It is true that sanitarians in general do not make as extensive use of vital statistics as could be done to advantage; but it is almost certain that if uniformity of practice were the rule among those who compile the statistics more use would be made of the data.

Vital statistics naturally fall into two divisions—*historical* and *operative* or *current*. History is essential as a background against which to measure the current data. So far as public health is directly concerned only the current information is of value, but it cannot be evaluated without the measuring rod of history. It is here that uniformity as it pertains to the continuity of records in the same area is of the greatest importance. Too often the methods of compiling and the information included change with the varying points of view of successive persons placed in charge. But even where uniformity of practice has prevailed, say in a state bureau of vital statistics, and comparable data are available over a period of years, the full value of such information cannot be realized because similar compilations are not available from other states, due to wide variations in practice.

Since the needs of public health demand current information, speed in the compiling of analyses is of the utmost importance. At the same time the information should be compiled so as to be directly comparable with historical data and it is entirely possible to produce such comparative information with speed and still have it in such shape that it automatically falls into the scheme of historical data without further effort. That is to say, the information so necessary to public health workers may readily be compiled in time to be of use to sanitarians in the field and when it has served its purpose in this direction may take its place without further compiling or arrangement in the background of history.

Standardization in the matter of compiling vital statistics brings with it every advantage of standardization enjoyed in any other line of work—manufacturing or commercial. With standard analyses would come specialization that would lead to the determination of the best possible methods of compiling vital statistics—and the promotion of efficiency with the consequent inevitable reduction of costs. All the excellent talent now scattered and to a large measure wasted could be brought to bear upon a specific problem with benefit to all who now struggle with the various disadvantages of isolation.

But before standardization can begin there must be an agreement as to what analyses are necessary. So long as each one proceeds along individual lines, just so long will the quality of vital statistics vary with the individual in charge.

To secure an agreement on this point by all concerned so that on a given date the practice would become uniform is an ideal impossible of attainment. The variation in the status of public-health activity in the different states will always call for a certain amount of special data to fit the needs. But it would appear to be entirely possible to lay out a standard minimum which would be within the possibilities of every state bureau of vital statistics—a standard which could be adopted with benefit by every state registration office—and thus furnish a nucleus to which could be added additional data as required. Were such a minimum laid down it would then be possible to discuss the most economical and efficient means of making the given analyses and by interchange of ideas the one best method could be arrived at. Should such a minimum be adopted by the several state vital statistics bureaus comparable data would be available on current work which would not only stimulate public-health activities, but would furnish a valuable basis for comparative purposes. The extensive compilations of the Census Bureau are of the utmost value historically, but even these lack some of the elements that should probably be supplied and which could be taken care of by individual states to greater advantage than by the Census Bureau.

An additional advantage of standardizing the state vital statistics would be that it would probably stimulate an immediate advance toward uniformity among the various cities where more or less haphazard methods are the present rule. With the state office supplying certain standard data the municipality could supplement it as required in much the same way that the state would supplement the Census Bureau compilations.

Since at least 50 per cent of the value of vital statistics is lost if they are permitted to become ancient history before the analyses are made, the work must be done currently, month by month, since the certificates are usually received at the state office once a month.

Table No. 1. Deaths from Principal Causes by sex, race, nativity and age of decedent. (Stillbirths excluded.)

Table No. 2. Deaths from Principal Causes in cities and counties. (Stillbirths excluded.)

Table No. 3. Infant deaths (under one year of age) in cities and counties by sex, race and maternal nativity. (Stillbirths excluded.)

Table No. 4. Infant deaths (under one year of age) from principal causes by age periods. (Stillbirths excluded.)

Table No. 5. Births in cities and counties by sex, race and maternal nativity. (Stillbirths excluded.)

Table No. 6. Stillbirths in cities and counties.

It is scarcely probable that anything like an adequate public-health program can dispense with the information given in these tables—in fact, it would be difficult to lay out such a program or conduct it intelligently with less.

TABLE NO. 1

In this table the stub is a list of causes of death, with columns for sex, race, etc. This need not give the full list of titles included in the International List, but is intended to be a systematic grouping of these titles. The abridged list used by the Census Bureau may be adopted, but this has one serious defect in that under the heading *Other Causes* are included titles from all of the fifteen main classifications so that it does not fall in easily with supplementary work where these main divisions are desired. Also in order to classify according to that list it is necessary to throw titles out of their regular order, which causes some inconvenience in many instances, especially where more detailed supplementary tables are com-

piled. Probably a better arrangement of a short list of causes of death is to leave the causes in the same order as they appear in the International List insofar as it pertains to the main subdivisions, giving individual numbers to those causes which are the subject of analysis for public health or other purposes, such as *typhoid fever, smallpox, measles,* etc., and assigning a number to all other causes within that main heading. The abbreviated list used in California is offered as a suggestion and illustration of this principle. By means of this arrangement the fifteen main subheadings of the complete International List remain intact and totals for them can be secured from the tables.

Morbidity figures, if complete enough to lend value to the totals obtained, can readily be used in conjunction with this table of deaths for the calculation of fatality rates, etc.

ABRIDGED LIST OF CAUSES OF DEATH

Group No.	*Title*
1	Typhoid
2	Malaria
3	Smallpox
4	Measles
5	Scarlet Fever
6	Whooping Cough
7	Diphtheria
8	Influenza
9	Dysentery
10	Poliomyelitis (Acute)
11	Encephalitis Lethargica
12	Meningococcus Meningitis
13	Tuberculosis, Lungs
14	Tuberculosis, Other
15	Venereal Diseases
16	Other General Epidemic Diseases
17	Cancer
18	Other General Diseases
19	Diseases of Nervous System
20	Diseases of Circulatory System
21	Pneumonia
22	Other diseases of Respiratory System
23	Diarrhea and Enteritis—under 2 years
24	Diarrhea and Enteritis—over 2 years
25	Other diseases of Digestive System
26	Nephritis
27	Other Non Venereal—Genito Urinary
28	The puerperal state
29	Diseases of the skin and cellular tissue
30	Diseases of the bones and organs of locomotion
31	Malformations
32	Early Infancy
33	Senility
34	Suicide
35	Other external causes
36	Ill defined and unknown

The monthly analysis of these cause groups furnishes a fairly satisfactory picture of the course of mortality during the year and while not adapted to every kind of statistical work it gives the basis for more detailed investigation when unusual fluctuations are observed.

Of the divisions of this analysis, age is the most important. In some cases race by age would be indicated by the requirements, in which case the additional analysis would be made so as to total into the indicated divisions of the standard form.

Some difference of opinion will develop as to the particular age groups to be shown. The following is proposed as a minimum. If additional groups are used they should be subdivisions of these so that they can be added to make the stated groups when desired.

AGE GROUPS

Code	*Age*
0	Under 1 year
1	1 to 4 years
2	5 to 14 years
3	15 to 24 years
4	25 to 34 years
5	35 to 44 years
6	45 to 54 years
7	55 to 64 years
8	65 years and over

The infant deaths (Code 0) require additional subdivision for the infant mortality analysis discussed below in connection with Table No. 4.

The segregation by sex, race and nativity is frequently of importance in the solution of health problems. It may serve as an indication of where to begin work requiring the expenditure of the usually inadequate appropriations. The totals also throw light upon the composition of the population and are sometimes useful in making population estimates. The character of migration may be determined to a fair degree of accuracy with the aid of these totals supplemented by similar figures for births and marriages.

The number of race elements to be included in a minimum should probably be confined to two—white and colored. If additional race elements are required they can be combined to fit the standard by the simple process of addition. The same is true for nativity. It appears that the minimum for this would be three divisions, namely, persons born in the state, persons born in other United States,

and foreign born. Whatever divisions are adopted should be adhered to for Tables Nos. 1 and 5.

TABLE NO. 2

This table presents a picture of the incidence of mortality from the several cause groups in the various cities and counties of the state. Its value is obvious. This table is most convenient when the cities and counties form the stub of the table.

One point where a difference of opinion will develop is with reference to the area or population to be treated as a unit. Another is whether the figures should show the grand totals for each county with supplementary figures for the cities which are separately carried, or the so-called rural portion of the county exclusive of the cities separately shown. A choice must also be made regarding the arrangement of the counties and cities. Should the counties be listed first and all the cities grouped, or should the county be given with the cities within the county listed immediately under it? With reference to the area or population which justifies separate compilation of vital statistics at the state office there is little data upon which to base logical action. Consider a theoretical city from the time it is an uninhabited area until it has say twenty thousand inhabitants. At what point in its development should the state bureau of vital statistics begin compiling separate data for it? What constitutes a city from the vital statistics point of view? Mere incorporation—which is practically always a commercial and political transaction—has no bearing whatever upon the matter. There are incorporated towns with no urban population and one incorporated "city" in California has only 32 inhabitants. The answer remains to be worked out and it is not the least important consideration in vital statistics. The only thing thus far accomplished is the adoption of arbitrary units which vary from cities of 10,000 to the smallest village. There is also a variation in practice as between the data for births and deaths such as shown by the tabulations of the Census Bureau. For the purposes of state compilations it appears that an arbitrary standard must be adopted. Statistics for cities of 5,000 inhabitants and over are separately compiled in California; and while this may not be the proper urban unit it has given fair satisfaction, it does not require too much detail, and might serve as a standard for state work. At this stage it may be well to point out the difference between separate statistical units and separate registration districts. Nearly all state laws specify some sort of political subdivisions as registration districts, but the evils of this practice seldom need extend to the analysis of vital statistics, for few if any statutes specify what information the state registrar shall compile. Probably the county, exclusive of the cities separately carried, offers the most adaptable rural unit for a minimum of detail in compiling. There are several reasons for keeping the vital statistics in such form that figures for the "rural" portion of the county may be available. One of the principal of these is that the financing of public-health work in such territory is usually a county problem. In order to avoid duplication of work the county figures should be exclusive of the cities therein for which separate compilations are made. The grand totals for counties can be easily secured by addition. The most convenient arrangement of the localities for practical purposes is to list the counties in alphabetical order, giving immediately below each county the cities therein for which separate figures are compiled. This arrangement keeps the counties in order, but does not readily give urban and rural totals separately.

TABLE NO. 3

This table forms the basis for computing infant mortality in the various cities and counties of the state. Its principal usefulness comes in connection with the

data compiled for births in Table No. 5. Funds available for infant welfare work are always inadequate, and if the greatest benefit is to be derived from the expenditure of what funds there may be, accurate and timely information must be had. With the data from Tables 3 and 5, infant mortality rates may be at once computed by sex, race and nativity of mothers, and a clue secured as to where and with what population groups the work should begin.

TABLE NO. 4

This table shows the ages at which the different causes of death bring about the greatest infant mortality. Considerable difference of opinion may exist as to the age periods to be compiled. It is only necessary to glance over the published data available to see how widely the practice varies. The object here is to suggest a minimum suitable for the use of sanitarians whose opportunities for lengthy study of data are limited, but which will nevertheless be adequate for all practical purposes. This has been the subject of considerable investigation and the following age periods appear to have met all necessary requirements:

AGE GROUPS FOR INFANT MORTALITY

Group	
0	Under 1 day
1	1 to 10 days
2	11 days to 1 month
3	1 month
4	2 months
5	3 months
6	4, 5 and 6 months
7	7, 8 and 9 months
8	10 and 11 months

TABLE NO. 5

The indicated analysis of births serves a double purpose: first, the items are used in computing infant mortality rates; and, second, the data serves as additional light on the composition of the population. The same races and nativities should be used as for the similar analysis of deaths.

TABLE NO. 6

One of the most urgent of public-health problems is the reduction of the number of stillbirths. If prenatal work forms any part of the health program, a statement of the number of stillbirths is essential. Where it is possible, the analysis should extend to show sex, race and maternal nativity in order to indicate the characteristics of the problem. The statement of totals for counties and cities is surely a minimum requirement.

It is a great convenience to adopt a standard size sheet for making the tabulations. This applies whether the compilations are made by "hand," or with the Hollerith tabulating machines or otherwise. The tables can then be kept in uniform loose leaf binders for ready reference. Sheets 14 x 17 inches have been found large enough for all the tables specified above. An economy is effected by having the columns ruled uniformly without printed headings, the headings being written in at time of compiling. A sheet of this size may have sixty lines and eighteen columns with a wide stub column at the left for entry of locality, cause of death, etc., with ample room above the ruling for writing in the title of the table.

THE CALCULATION OF RATES

One of the first duties of a state registrar should be to bring together all available data concerning the composition and characteristics of the population of his state. The bureau of vital statistics is the logical place for the collection of such data and certainly an understanding of the vital history of a people cannot be attained without it. There should be at hand, as a minimum requirement, the following information, either secured direct from published data or carefully estimated from whatever information is obtainable from the vital statistics or otherwise: (1) population of each city for which separate vital statistics are compiled; (2) population of each county, exclusive of such cities; (3) population of each county (total); (4) population of the state by sex, race, nativity and age periods; (5) for the state, females, fifteen to forty-five years of age, and married women, fifteen to forty-five years of age.

With these figures available, monthly rates may be readily calculated covering all essential items in the tabulations here outlined. By developing a set of constants for the various units of population the labor of figuring rates may be reduced to a few minutes per month. The writer has used nearly every kind of calculating device and has found the comptometer to be the most suitable for all operations involving arithmetical calculations.

PUBLICATION

There should be some means provided for placing vital statistics in the hands of sanitarians as soon as compiled. The amount of detail given should be sufficient to meet the needs of public-health work, and will no doubt vary in the several states. For this reason it is difficult to fix upon a definite minimum that will fit all requirements. Health officers and other public-health workers are interested in the vital statistics of their own communities. They are also interested in comparing their territory with other localities. If figures can be supplied promptly from the state office the local workers can devote what time they may have for vital statistics to the compilation of supplementary data, and duplication of effort thus be avoided.

Where finances will permit, all figures in the tables discussed above should be distributed to the health officers within the state, either by having the tables printed or by means of the mimeograph or other duplicating device. Where this cannot be done it would appear that the minimum for current distribution would be a table giving, for each county and city of the state, the total births, total infant deaths, total deaths and deaths from selected causes, the latter to include the communicable diseases, puerperal deaths and others as required.

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BENZOL POISONING*

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AND
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WITHIN the past few months in Baltimore, there have been three cases of benzol poisoning, two of which were fatal. All three of these cases were workers who were employed in the same can manufacturing plant. On account of their occurrence within a short space of time of each other and the high fatality and severity of this type of poisoning, we think it of sufficient importance to report, so that both the attention of public-health workers and medical men will be directed to this condition, which is frequently confused with other conditions and overlooked until a grave menace has occurred.

In the past decade and a half, in this country and abroad, numerous investigators have called attention to benzol poisoning which occurred in canning industries as well as other commercial enterprises where benzol is used as a solvent and for other trade activities. According to Selling,[1] there were no severe cases of acute industrial poisoning at the time he wrote his article. According to Alice Hamilton,[2] during the years 1915 and 1916, she reported 14 cases with a fatality of 50 per cent.[3]

On April 11, 1922, Dr. C. Hampson Jones, Commissioner of Health of Balti-

* Acknowledgments are made to the officers and staffs of the University of Maryland Hospital, the Maryland General Hospital and St. Joseph's Hospital, to Dr. C. A. Reifschneider, Surgeon to the plant, and to Dr. C. Hampson Jones, Health Commissioner of Baltimore.

1. Selling, L. Bull., Johns Hopkins Hospital, 21:33, 1910.
2. Hamilton, Alice. Jour. A. M. A., March 4, 1922, p. 627.
3. Hamilton, Alice. Jour. A. M. A., May 19, 1917, p. 1445.

more, ordered an investigation of a can manufacturing plant, as he had received a report by telephone from Dr. Wm. T. Riley of a patient in his ward (St. Joseph's Hospital history No. 1,347) who was suffering with hemorrhages from mucous membranes with a low hemoglobin and a low blood count and he believed the case to be one of benzol poisoning. About this time, one of the writers was informed by Dr. Austin H. Wood, of the staff of the Maryland General Hospital, of an interesting case, assigned to the Service of Dr. Erasmus Kloman, that had been discussed on the night prior at a meeting of the hospital staff of that hospital. On investigation of these cases, the following information was obtained from the hospital histories:

CASE NO. 1

K. H., white, female, age 17, University Hospital history No. 28,331.

Admitted to University of Maryland Hospital on March 14, 1922; died March 19, 1922, five days later.

Attending physician: Dr. C. A. Reifschneider, 2939 Eastern Avenue, Baltimore, Md.

Diagnosis: Acute Myocarditis. Benzol Intoxication. Secondary Anaemia.

Complaint on admission to hospital: Weakness and bluish spots on body.

Family history: Unimportant.

Past history: Patient had been employed for the six weeks previous to onset of illness in a can manufacturing plant where she worked in the "dope room" inspecting the reddish material (rubber gaskets) on tops and bottoms of cans.

On March 4, the patient became weak and had a poor appetite. On the tenth she had a headache and noticed bluish discolorations on arms and legs. Three days later, March 13, she had difficulty in swallowing food due to a sore mouth and on the fourteenth she felt dizzy and spat blood.

Physical examination: When admitted to hospital, March 14, symptoms of anaemia were very evident. She was undernourished and had pale mucous membranes and skin, weakness, shortness of breath and a haemic murmur of heart. Purpuric spots were found on the skin of the arms and legs. Her mouth was sore—stomatitis. She was found to be bleeding from the vagina.

Examination otherwise unimportant.

Blood examination on admission:

White blood cells..... 600
Red blood cells.....1,240,000
Hemoglobin. 39%

Red blood cells showed forms of anisocytosis and poikilocytosis.

The patient was transfused with blood shortly after admission and seemed to increase in strength. On March 19, she suddenly became weaker and died that day.

CASE NO. 2

H. S., white, female, age 25, Maryland General Hospital history No. 7,193.

Admitted to Maryland General Hospital on March 7, died March 24, seventeen days later.

Attending physician: Dr. Erasmus Kloman.

Diagnosis: Placenta praeva.

Family history: Unimportant.

Past history: Patient had been employed in a can manufacturing plant just previous to onset of illness.

Present illness: An attempt was made to deliver her and a mascerated fetus was obtained. Patient was markedly anaemic. Blood count was as follows:

Date	W. B. C.	R. B. C.	Hemoglobin	Small Lymphocytes	Large Mononuclears	Polynuclears
3-7-22			22%			
3-16-22	1,400					
3-17-22	538	470,000	19%			
3-20-22	434*		22%			
3-24-22	104	900,000	12%			
				56%	2%	42%

* Following transfusion.

CASE NO. 3

J. J., white, female, age fifteen, St. Joseph's Hospital, St. Anne's Ward, Bed No. 18, on April 9, 1922.

Physician in attendance: Dr. W. T. Riley.

Physician sending case to hospital: Dr. B. V. Kelly.

Complaint: Bleeding from womb and weakness.

Family history: Unimportant.

Past history: Patient had been worker in a can factory around can tops, benzol department. She began working in the factory five weeks ago. Three days after starting work

she had nose bleed. About one week after starting work, she had hemorrhages from mucous membranes, loss of appetite, and felt tired in the evening. At the end of two weeks, she noticed that she was getting pale and her loss of color was commented on by friends.

Three weeks after beginning work, the patient began to bleed from the vagina, which was thought to be menstruation. The flow of blood continued until entrance into hospital and for several days thereafter. At the beginning of this supposed menstruation, she was compelled to quit work on account of weakness. She vomited twice during the first day of this supposed menstruation. Otherwise, she had no nausea or pain, except frequent frontal headaches. She sleeps very poorly. The stools have been tinged with blood.

Physical examination: Unimportant except for symptoms of anaemia, pale mucous membranes and skin, weakness, shortness of breath and a haemic murmur over heart.

Blood pressure: Systolic, 113; diastolic, 62.

Patient admitted to hospital with diagnosis of suspected miscarriage. Vaginal examination showed hymen to be intact but there was bleeding from within the vaginal cavity.

Blood examination on admission:

Hemoglobin	20 (Talquist)
Red blood cells	880,000
White blood cells	950
Polymorphonuclears	38%
Small mononuclears	52%
Large mononuclears	8%
Eosinophiles	2%

Other blood counts were as follows:

Date	W. B. C.	R. B. C.	Hemoglobin	Small Lymphocytes	Large Mononuclears	Polynuclears
4/12/22	950	880,000	16%	52%	8%	38%
4/13/22	1,200	930,000	17%	38%	4%	56%
4/14/22	1,950	1,544,000	38%	46%	6%	46%
4/15/22	4,700	1,985,000	42%	18%	4%	76%
4/18/22	3,050	2,184,000	44%	40%	8%	50%

Transfusions were done April 11, 13 and 15.

Patient, when seen by one of the writers on April 14, was markedly anaemic, pulse fair volume, temperature has ranged from normal to 102° to 103° since admission.

Investigation was made of the plant on April 12. The plant is located in a three story building in which 750,000 cans are being made daily. Employed in this factory are 300 men and women. Fifty-eight of these work in the room where the bottoms are being attached to the cans. In this process a glue is used to assist in making the bottoms watertight. This glue is composed of pure rubber and an analine dye dissolved in benzol. The mixture is prepared in Baltimore after a formula furnished from a New York firm. Additional benzol is added to this rubber-glue at the can factory, the amount depending upon the consistency of the mixture when received. The benzol is obtained in steel drums from a New York firm.

In the manufacture of tin cans, the use of solder in hermetically sealing the tops in the old so-called hole-and-cap type of cans has been superseded to an increasing extent by the so-called sanitary type of can which does not use solder for hermetically sealing the end but accomplishes the same purpose by placing a gasket on the rim of the end and crimping it to the flange of the can body. It is in the placing of this gasket that benzol is used.

The rim of the can-top is stamped to form a moat which receives the rubber in the form of a benzol solution, deposited in the moat by a fine jet. Automatic machinery conveys this top to a steam heated box where the benzol is evaporated from the benzol rubber solution, leaving a residual film of rubber adhering to the moat. It is in the evaporation of this benzol that dangers to the workers have developed.

The practice of the trade has been to provide insufficient means for evaporating all of the benzol from the tops with the result that the tops emerge from the evaporating box with the rubber gasket still benzol wet. As the workers must inspect each top before boxing in order to detect imperfections and insure continuity of gaskets, it is apparent that

they are compelled to inhale the slowly evaporating benzol. Some sort of an air exhaust system is usually connected with the evaporating boxes to remove the benzol fumes; some plants, furthermore, endeavor to continually change the air about the workers to remove as much as possible of the fumes which escape into the room.

In connection with the above cases of poisoning of benzol, the can factory was equipped as usual except that the ventilating system was lamentably insufficient to remove the volume of benzol laden air from the evaporating boxes. In fact, in four out of a total of eight evaporating boxes, the air pressure was from within the box outward through the ventilating dampers into the room, while in the remaining four boxes the draught from without the room to within the box was so faint that no movement of a fine thread was observable when held over the ventilating dampers of the boxes. As a result, the odor of benzol was very strong throughout the entire floor and was even observable on the floor below. The windows were wide open and a slight breeze was blowing which resulted in appreciable benefit only to the operators placed near the windows and had no noticeable effect upon those operators located toward the center of the room.

The faults of the whole ventilating system were as follows:

(1) The fan and exhaust pipes were totally insufficient to handle the volume of air fed into this line through the openings in the evaporating boxes, augmented as they were by the opening of all the dampers.

(2) By placing the exhaust fan at one end of a manifold into which each of the boxes fed, there resulted a "dead end" from which air from within the boxes moved outward into the room, due, of course, to the expansion of the heated air and the increased volume as a result of the added gaseous benzol, augmented as they both were by the steam heat introduced to facilitate evaporation.

All industrial surgeons and physicians employed or engaged in this work should constantly be on the lookout for anaemia in these plants and when they become suspicious in the slightest degree should do a complete blood examination, including a total white blood count, a total red blood count and a hemoglobin estimation. It is absolutely essential to make a diagnosis in all these cases to have the total white count, the total red count and the hemoglobin estimation. With a marked diminution in the red cells, a profound leukopenia and a pronounced reduction of hemoglobin of an employee in such a factory, an investigation should be started immediately by the health officials, either local or state, to ascertain the conditions in the factory and to immediately take steps to correction as recommended above. The writers realize that most females of this age, having an anaemia and giving a history of vaginal bleeding, are most naturally suspected of having a threatened abortion or some other form of pelvic trouble. The medical personnel of such factories should not be satisfied by making such a tentative diagnosis, but should at once make a complete physical examination and, what is more important, a complete blood examination without any delay. Any employe showing signs of benzol poisoning should be properly treated and transferred to another section of the factory where she will not be exposed to the benzol poisoning because such an individual undoubtedly has a marked susceptibility to the poisoning.

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ODORS—THEIR SANITARY SIGNIFICANCE AND THEIR ELIMINATION*

J. Rosslyn Earp, M.A., M.R.C.S.

BEFORE broaching the rather special question of the sanitary significance of odors, it will be profitable to inquire as to what in general terms is the biological significance of the sense by which odor is detected. If the lower animals are considered as well as man, the fundamental importance of this olfactory sense cannot escape notice. The startled deer stands with dilated nostrils to the breeze sure that her nose, before her eyes, will tell her whither to flee. The hungry wolves press with relentless speed upon a trail which the ordinary human being cannot distinguish at all. It must be mentioned though, that in certain tribes the acuteness of the sense of smell is not altogether lost. W. H. Hudson in a posthumous essay[1] tells of the cannibal and ophiophagous tribes of Queensland who were found by Lumholz to hunt by smell the serpent, a large species of boa, upon which they lived. Lumholz, though he lay with his nose to the ground, could not distinguish the odor which these tribesmen were following with ease.

It is perhaps too much to hope that a sense which is fundamentally necessary to reproduction, nutrition and self-preservation will have an obvious relation to the very modern product of civilized races which we call *sanitation*. No one can suppose that our noses have been evolved in order that we may smell drains or detect a "nuisance." Yet there is, I am persuaded, something quite fundamental in our aversion to a rotten egg; and, after all, the smell of a rotten egg is not far removed from the smell of a sewer. Greenwood[2] disagrees with an assertion, made he does not say by whom, that the sense of smell was developed as a means to avoid noxious gases. There is an implication of design in this statement which would scarcely be acceptable to any biologist. But if our subject is broadly conceived it is surely reasonable to argue that a sense patently adapted to distinguish good food is likely to be adapted to distinguish bad food also. If such were the case we should expect the odors produced by putrefaction to be uniformly distasteful to animals, including man, and so far as our observation goes this does appear actually to be the case. Indeed, the great majority of the evil smells in nature are due to the decomposition of organic matter. There are notable exceptions, such as the smell produced by the skunk to discourage his enemies. But such an exception is no discredit to the general theory; for it may well be that the skunk owes his survival to his creditable imitation of dead and rotten putrescence.

THE RISE OF INDUSTRY AND OF ITS EFFLUVIA

Odors have no doubt been manufactured since prehistoric times both intentionally for their esthetic value and unintentionally, that is to say, as by-products.

With the coming of the industrial era, however, the problem of manufactured smells became of immediate practical importance. Factories grew up abundantly and gathered about them the tawdry, overcrowded dwellings characteristic of this period. There could be no question that in many instances the workers and their families were forced to live, move and have their being in an atmosphere redolent with the fulsome exhalations of their trade. Complaints began to arise and from influential quarters. In France as elsewhere the very existence of certain profitable manufactories seemed to be threatened with untimely extinction. For the safe-

*Lately associate editor International Journal of Public Health.

guarding of these infant industries the French statesmen appealed to the wisdom of the physical and mathematical class of the French National Institute. Their judgment in making this appeal was vindicated by a report[3] which states with admirable lucidity not only the problem of that day but the problem (for it is the same) that confronts us at the present time. The report was read at the sitting of the twenty-sixth Frimaire and first published in the *Annales de Chimie*. The following quotation is from a translation which appeared in the *Edinburgh Medical and Surgical Journal* in 1806. For a transcript of this article I am greatly indebted to the librarian of the Royal Society of Medicine of London, England.

"The Minister of the Interior has consulted the class upon a question the solution of which is of the greatest importance to our manufacturers. Is the neighbourhood of certain manufactories prejudicial to health?

"The solution of this problem must appear the more important, as by the confidence naturally placed in the opinions of the Institute, it may henceforth form the basis of judicial decisions when the fate of a manufactoty and the health of a people are concerned.

"This solution is the more urgent and is become the more necessary, as the fate of the most useful establishments, nay, even the existence of many arts, has hitherto depended on simple regulations of the police, and as some, driven to a distance from materials, from labour, or from a due consumption, by prejudice, ignorance, or jealousy, continue to struggle with disadvantage against the numberless obstacles opposed to their prosperity. Hence we have successively seen manufacturers of acids, of sal ammoniac, Prussian blue, beer, and leather, banished from the precincts of cities, and hence these same establishments are still daily complained of by captious neighbours, or invidious rivals.

"So long as the fate of these manufactures is insecure; so long as a legislation, purely arbitrary, can interrupt, suspend, or fetter the efforts of the manufacturer; in a word so long as a mere magistrate of police shall wield in his hands the prosperity or the ruin of a manufacturer, how can we suppose that he will have the imprudence to embark in enterprises of this nature? . . ."

After more than one hundred years there are still "captious neighbours" if not "invidious rivals" whose complaints may well result in the banishment of say, the manufacture of leather "from the precincts of cities." Dare we say that the legislation of to-day in these matters is much advanced from the "purely arbitrary" standard of the early nineteenth century? Neither the report of the physical and mathematical class nor other efforts in the same direction have succeeded in establishing a scientific mensuration of the sanitary significance of odors. Their failure may be ascribed to two main causes: in the first place to the want of scientific research in the physiological and pathological effect of odors and in the second place to the absence of satisfactory objective methods of classifying odors and measuring their intensity.

THE EFFECT OF ODOR ON HEALTH

To obtain a concrete conception of the nature of our problem let us picture the health officer confronted with a complaint. Mr. X enters his office one day in a state of some agitation. From an incoherent and volatile description of the circumstances the health officer learns that from the garden of Mr. Y, neighbor to Mr. X, there is wafted at irregular intervals a mephitic odor which may or may not be due to an insecure cesspool; that the youngest grandchild of Mr. X has been made seriously ill thereby and that the rest of the family have sore throats and other symptoms of poisoning. Very possibly the health officer would like to poohpooh the whole story and get on with the serious investigation of a local diphtheria epidemic which he has in hand. But it is probable that the regulations of his local authority will not permit him to ignore a complaint of a "nuisance," however trivial it may appear on first sight.

But whither shall the health officer turn for information on the toxicity of different odors? It is a subject upon which the majority of textbooks are as silent as the grave. The truth is that the subject has not received the attention which it merits. T. E. Shields[4] carried on some interesting research at the Johns Hopkins University and published his results in 1896. He showed that olfactory stimulation caused an increase of blood flow to the brain and a stimulation of the myocardium. Among the smells capable of producing this reaction were wintergreen, wood violet and heliotrope. I have not been able to find that this promising line of research has ever been followed out. Theoretically it would

seem feasible for the physiologist to arrange a classification of odors according to their physiological effects. Such a classification might be really useful to the health officer, who in the absence of direct evidence on the pathological effects of an odor might still be able to say: "This odor belongs to the vasodilator group" or to some other like category. Such records, though they might not help in an immediate adjudication, would have permanent value and taken in relation with the nature of the complaint might lead eventually to the definite incrimination of certain classes of odors from the health point of view.

At present the scientific evidence concerning odors as disease promoters is mostly on the side of the accused. Park[5] considers that "the putrefactive gases given off from fecal materials might be considered as an extreme limiting case for the study of the effect of organic effluvia upon health," and adds "even here, however, it seems doubtful whether any injurious influence can be shown." Before adding the evidence which supports the latter statement it is perhaps worth while to question Park's hypothesis. He does not give any reason for supposing that the odors derived from the putrefaction of feces should be poisonous above all other mephitic odors and it is not easy to imagine exactly upon what basis such an argument is advanced. That fecal putrefaction does not produce seriously dangerous odors has been unquestionably demonstrated by Winslow and Greenburg[6] who devised a well controlled test for determining the effect of fecal odors upon the rate of growth of guinea pigs. While one set of animals received pure air, another set received the same volume of an air that had been passed over fresh moist feces. Although in the first week these latter animals did not put on as much weight as the controls, in the second week they made up the deficiency and thereafter no difference in the rate of growth of the two sets could be observed.

In an earlier experiment with a different collaborator[7] Winslow showed, however, that in the case of man there is a definite loss of appetite resulting from eating in a room in which the air has been odorized by previous occupants. In his experiment he took care to hold physical factors like temperature and humidity constant both for fresh air and for vitiated air and so attributes a loss of appetite directly to the vitiation. It must be remembered that if the subject of the experiment lived constantly in a vitiated atmosphere, as in the case of the guinea pigs, a different result might be obtained. Parker[8] points out that "persons whose occupations lead them to work among disagreeable odors soon become insensitive to these" and that "it has long been recognized that invalids are not affected by the malodors that may come from their own bodies." While we may be allowed to doubt whether the last sentence is invariably true, the writer's contention that fatigue of the olfactory apparatus is a source of protection is undoubtedly a just one. There is more work to be done, however, in this field. Pawlow showed that the digestive secretions are reflexly stimulated by appetizing smells. Will not someone repeat Pawlow's classical experiment combining or preceding the appetizing smells with a variety of more or less unsavory emanations? It would be interesting to know whether odor may not have an inhibitory as well as a stimulating action on these reflexes and if so which are the odors which inhibit.

The physical and mathematical class of the French National Institute assert in their report[3] that "the fumes which are emitted by fermentation or putrefaction are really prejudicial to health in some cases, and under some particular circumstances." They point the finger of accusation confidently at one particular trade: "the steeping of flax, which is practised in stagnant pools or pits, infects the air, and is fatal to fish. The diseases to which this gives rise are all

known and described." Alas, those happy days of certainty are passed away. We cannot to-day ascribe any known disease to odor.

There are, of course, poisonous gases, like hydrogen sulphid, that have a pronounced smell. There are also gases that are poisonous which either have no odor or have one which man is unable to detect. There are probably many in the second class, for it is known that the human nose cannot detect the presence of any gas whose density is less than 15 times that of hydrogen, while gases like hydrocyanic acid, which are on the border line of this density, can be smelled by some but not by all.[9]

We must conclude that the direct effect of odors upon health has not in any case been shown to be seriously injurious, except in the case of certain toxic gases. Less directly odors may have a real sanitary significance. A smell of "drains" may suggest a polluted water supply. Coal gas odor may suggest inodorous carbon monoxid; and indeed it has been found advisable to add odorous impurities to the inodorous water gas as a safeguard against gas poisoning through inadvertence. In such cases odor is significant as a clue to some event of sanitary importance and the elimination of such odors is to be desired only through the removal of the danger which they indicate. It is necessary to remember this, when we read the accounts of drain or sewer air given in some of the textbooks. Parker and Kenwood[10] in their section on the vitiation of air from decomposition of organic matter quote some important work by Hancock and more recently Andrewes proving the presence of pathogenic bacteria in sewer air. They give full credit to sulphuretted hydrogen as a dangerous poison, a credit which the most recent work[11] fully confirms as its due. But nowhere in this section is the word odor to be found.

There is still apparently a belief among the members of the medical profession that the odor of human emanations is closely associated with a poisonous substance. Gresley[12] speaks of this as "crowd poison" recognizable by its odor only, perhaps consisting of putrefactive gases and suspended solid particles which "probably tend to poison the body much as intestinal putrefaction does." The author does not back up his faith by any very substantial arguments.

If, then, we cannot incriminate odor as a menace to health, are we any longer interested in its nature, its amount, or the means for getting rid of it? Certainly we are. The captious neighbor haling the enterprising merchant before a mere magistrate calls still and insistently for justice; Mr. X will still complain of the disagreeable smell which comes from Mr. Y's garden, if not to the health officer then to some other public servant delegated to receive such complaints. Though in some countries people are still content to suffer the smell of sewer gas in their houses, as civilization advances standards of comfort change and in most civilized countries to-day a badly ventilated plumbing system would give rise to instant complaint. To those who complain we do not insist that the men who take care of sewers and of sewage works find their occupation a healthy one or that the amount of sewer gas which may escape backwards into their house cannot be shown to be injurious to their health. I must refer once again to the report of the mathematical class, for it is plain that even in 1806 they held a nuisance to be still a nuisance even when it is not "likely to affect health."

"The manufacture of poudrette is now establishing itself in all the great cities of France; and the operation by which night soil is reduced to a state of powder necessarily diffuses for a long time a most disagreeable smell. Establishments of this kind ought therefore to be formed in airy situations, and far from any dwelling, not that we regard the gaseous exhalations from them as prejudicial to health, but we cannot deny that it is inconvenient, tainted, disagreeable, and difficult to breathe. On this account, therefore, these ought to be removed to a distance from the habitation of man."

It is a matter of common consent that disagreeable smells are not to be endured. This brings us at once to the question: What constitutes a disagreeable smell,

and to the conscious need of some system of classification.

CLASSIFICATION OF ODORS

A very large number of proposed classifications are on record and amongst them are to be found systems in which agreeableness or disagreeableness form the basis of classification. Let us take as an example a system proposed by Linne.[9] It runs as follows: aromatic, fragrant, ambrosial, alliaceous, goaty, repulsive, nauseating. To make these classes more definite, certain types of odors are attached to each main division. Thus under "goaty" Linne would include the odors of "cheese, cat's urine, and rancid oil." The weakness of such a classification is obvious. Probably no two men would arrange a given set of odors in the same order of agreeableness. Our attitude to smell depends for one thing upon our hereditary makeup. Thus, the African native smells disagreeably in the nostrils of a European, and the European is still more offensive to the olfactory sense of a Japanese.

But it is the close connection established in the human mind between an odor and its attendant circumstances that invalidates all human judgment on the pleasantness or displeasingness of smells. Hudson[1] found that his friends objected when he used cologne or lavender upon his handkerchief and protests that two centuries earlier an Englishman might have saturated himself with odors and would not have been thought nasty or effeminate. Two hundred years has not changed the odor of cologne but it has changed its order in the popular classification.

Many would agree with Hudson regarding the deliciousness of that peculiar odor associated with the business of brewing. Yet among prohibitionists I have found not a few who would classify this same odor as "repulsive" if not as "nauseating."

A classification based on subjective judgment is therefore useless. It has been shown that at present our knowledge of the pathological and physiological effects of odors is insufficient to form the basis of any classification; and though a defensible classification on the basis of the relation of odors to the chemical constitution of the specific odorous substance has been envisaged by Henning[8] it is difficult to see how such a classification could be useful in evaluating the extent of a nuisance.

The magistrate will simply have to ask this question: Is the smell disagreeable to the majority of human beings or is it not? If the answer is affirmative then the odor must be eliminated, if necessary by the suppression or removal of the industry which causes it. If not, then the complainant will either have to put up with the smell or remove his dwelling elsewhere.

This rough principle of justice underlies the British laws on nuisances. By section 112 of the *Public Health Act* (1875) new establishments of any offensive trade are prohibited within the district of urban sanitary authority, unless their consent in writing is obtained, under a penalty of £50 and a continuing penalty of 40 shillings a day. Section 112 defines offensive trades: they are blood boiler, bone boiler, fellmonger, soap boiler, tallow melter and tripe boiler.

In 1911 the Local Government Board added by order: fish fryer, and dealer in hides, skins and fats. The model by-laws of the Local Government Board also stigmatize the following trades: leather dresser, tanner, fat melter or extractor, glue maker, size maker, blood drier, and gut scraper.

It is to be noted that any enterprising merchant who contrives a method of carrying on these trades without causing an offensive odor has only to demonstrate his method to the proper authority in order to get a written consent for the establishment of his plant wherever it may be convenient.

Failing a classification which will be of use in graduating odors either accord-

ing to their banefulness or according to their displacency, it will be helpful to adopt a simple dichotomous classification with the single object of distinguishing odors ordinarily so-called from odors usually but quite wrongly known as tastes. There are four true tastes, namely: sour, salt, bitter, and sweet, and possibly two more which may be described as metallic and alkaline respectively.[8] A really efficient cold will abolish all the fine flavors which we expect to find in our food and the same effect can be produced by pinching the nose—a method which incidentally has been found useful as an adjuvant to the administration of medicines that have unpleasant "tastes." Under these conditions that put the olfactory organs out of action, onion is found to have a sweet taste exactly like apple. The "taste" which in common language is called the taste of onion is really its odor. For practical convenience, then, I shall speak of two kinds of odor, the dissolved and the diffused. The first class is a frequent course of complaint in polluted water, the second is wind-borne from the source of nuisance. It is to be clearly understood that in both cases the odor reaches the *regio olfactoria* through the air and is then dissolved before it can be detected; but an odor that is carried in solution as far as the observer's lips may nevertheless be reasonably classed as a dissolved odor.

THE MEASUREMENT OF ODOR

When the health officer comes to report on the odor issuing from the garden of Y he will obviously be expected to say how strong that odor is. At present he usually falls back on some very approximate measurement, (a) "The smell is strong," or (b) "The odor can be detected half a mile from the garden," he may say. But Mr. Y will retort (a) "That depends on your definition of 'strong,'" or (b) "The wind was blowing half a gale in your direction." Again, if he says "The smell was only just noticeable, Mr. X will retort, "You must have had a cold," or "You should see a doctor about your nose." It is with great difficulty that I refrain from citing a large number of humorous stories which illustrate marked individual variation of olfactory acuity. But space is valuable and no one will deny that these differences in power of perception do exist. For this reason it is highly desirable to discover an objective method of measurement, such as has been devised for the mensuration of light and sound. There is, however, a fundamental difference between light and sound on the one hand and odor on the other. The first two are vibratory disturbances of the ether, the third is a number of gaseous molecules.

Now, when the chemical composition of the odoriferous gas is known it is always possible to measure the concentration of its molecules by purely chemical methods. By passing a measured volume of air containing sulphuretted hydrogen through a solution of lead acetate and by estimating the lead sulphide precipitated it is possible to determine what concentration of sulphuretted hydrogen was present in the sample of air. Most odors met with in practice are not, however, amenable to this method of chemical analysis because their chemical composition is unknown.

It is possible that a physical mensuration of odor may be developed and there are indications to be discussed below that a method is even now being discovered. The hopefulness with which we may look toward such a discovery depends a good deal on whether the ultimate stimulation of the olfactory sense organ be considered as due to a physical or a chemical phenomenon or to a combination of both. And here we broach a subject upon which the experts may be said to be in desperate disaccord. According to Parker[8] "It is admitted on all sides that olfaction is essentially a chemical process," and he goes on to quote investigators who have been able to show in certain cases a relation between chemi-

cal structure and olfactory sensation. Durrans[13] considers that the probable sequence of events is as follows: first, the odorous substance is dissolved in the watery layer which at all times covers the mucous membrane (there can be no disputing this first step); there is then a partial solution in the lipoid fats of the sensory end organ, the amount which passes into a lipoid solution in a given interval varying with the solubility partition coefficient of the substance in water and the lipoid fats. An additional reaction then occurs in the fats, causing an energy change, which change constitutes the stimulus that is translated into smell by the brain cells. This theory is interesting in that it makes olfaction depend upon both chemical and physical phenomena. Watson[14] on the other hand discredits the suggestion that olfaction is a chemical process. He finds that there is no chemical reaction between several typical odorous substances such as ethyl acetate, pyridene, and citronella, on the one hand, and a typical protein, namely egg white, on the other. Traube has stated that the strongest smelling substances produced the greatest depressions in surface tension. Watson's experiments on surface tension largely confirm this conclusion inasmuch as out of 22 substances tested, 17 followed exactly the same order when arranged according to the intensity of the dissolved odor or according to the depression of surface tension of the liquid. It is possible that a more exact determination of surface tension might have resulted in a larger measure of agreement. Also it may be suspected that ammonia—one of the substances which behaved exceptionally—is out of place because its action on the trigeminal nerve endings makes it unsuitable as an example of an odoriferous gas.

Further evidence in favor of olfaction being in part at least a physical process is to be found in recent important experiments of Zwaardemaker[15, 16, 17] of Utrecht to whom are due so many of the advances made during the last half century in the scientific study of olfaction. Zwaardemaker and his colleagues have shown that if pure water is sprayed no electric charge is developed. The same is true of water containing some inorganic salts. With certain other organic salts the spray develops a negative charge of electricity. But when water containing dissolved odors is sprayed a charge of positive electricity is found. Moreover, it is found that if the solution be diluted until the electrical phenomena are only just appreciable that point of dilution corresponds exactly with the point where odors are only just appreciable to the olfactory sense. The charge of spray electricity provides us with an objective standard of measurement which may yet be found applicable to the objective determination of "strength" of smells.

At the present time exact measurement can only be made of odors that consist of substances of known chemical composition. These odors can be accurately measured whether they are dissolved or diffused.

A word must be said, however, on measurement by the subjective method. Various contrivances have been designed to dilute the odor laden atmosphere with a measured volume of pure air so that the odor is only just appreciable. The most ingenious of recent methods is perhaps the odiometer devised by Allison and Katz[18] in which a measured and uniform flow of air is secured by the use of Venturi meters. The method is applicable both to diffused and dissolved odors since in the latter case air may be passed through the solution to be tested and a measurement made of the odor which is taken up. Indeed, this latter application is most nearly alike the purpose for which this apparatus was designed, to determine the degree of odor due to a given concentration of a chemical substance in the atmosphere.

The main objection to this method, already mentioned, is that the keenness of the sense of smell varies greatly from

one observer to another. If we could assume that a single individual's acuity for one particular smell was a measure of his acuity for all smells, then the difficulty might be overcome by testing his acuity against a smell of known concentration. The assumption is, however, a dangerous one.

Moreover, there are other objections to the subjective method of mensuration. Fatigue of the olfactory sense takes place very rapidly. The observer would have to live in a pure atmosphere and would have to limit the number of tests per diem quite severely—the eight-hour day would be much too strenuous! It is not merely that fatigue to one odor makes it impossible to smell that particular odor, but the first odor may immediately render our observer totally incapable of detecting certain other odors. Thus, Aronsohn showed in 1888 that after smelling camphor it is not possible to smell either ether or eau-de-cologne.[9]

There is also an hereditary condition, analagous to color-blindness, and technically known as partial anosmia. In order to avoid being led into error through this possible defect in the observer it would be wise to employ a "control" observer. Temporary partial anosmia may occur as a result of certain diseases and may be preceded by hyperosmia. Truly the attempt to secure an accurate mensuration by the subjective method is beset with pitfalls and it is hardly surprising that health officers continue to use such rough approximations to measurement as we have cited.

THE ELIMINATION OF ODORS

When the health officer advises the magistrate that a nuisance should be remedied, he must go a step further and say how he anticipates that this may be done. The first and the last thing that he should think of is the removal of the source of offense—the first thing because this is always the most satisfactory and is frequently the easiest way of eliminating the odor, the last thing because if all other methods fail it may become an expensive and unpleasant necessity. If the smell from Mr. Y's garden is due to an overflowing cesspool the simplest remedy may be to do away with the cesspool and connect up Mr. Y's house with a sewer. But if no sewer is available we must seek methods of disposing of the excess sewage. It may be that finally we shall still, at considerable expense either to the community or to Mr. Y, have to abolish the cesspool. Before we decide to do so we must consider whether there is a simpler and cheaper method of solving our problem. I shall briefly sketch a few of these cheap and simple methods. Since nuisances vary enormously not only with the operations that give rise to them but also with localities in which these nuisances are situated, it is not possible to lay down specific rules for the elimination of all odors. It will be found, however, that the existing methods all depend on one or other of the following principles:

1. Removal of the source of offense.
2. Removal of putrescible by-products
   (a) by sedimentation;
   (b) by filtration;
   (c) by skimming;
   (d) by biological treatment;
   (e) by oxidation.
3. Oxidation of the offending gases
   (a) in solution, the gases being sometimes deliberately dissolved;
   (b) by combustion;
   (c) by chemical agency, notably by the action of chlorine gas;
   (d) by aeration.
4. Removal of offending gases by specific chemical reactions.
5. Filtration of the offending gases.

In the routine removal of domestic wastes, the putrescible products are brought at last to disposal works. Both in sewage and in garbage disposal unpleasant odors are liable to be diffused into the surrounding atmosphere. For this reason the works are usually re-

moved, it may be at some cost and inconvenience, to a distance from habitation. That this is not necessary has been shown by Dr. Imhoff, who has installed several large sewage disposal plants in close proximity to dwelling houses. The sludge from a properly constructed and properly operated Imhoff tank is in fact without offense. This is an example of removal of putrescible material by biological treatment. In Austin (Texas), however, there are special circumstances which make it impossible to remove all the odors by this means. Leonard[19] describes how the odors have been eliminated by burning the gases which are given off from the gas vents. This method of destroying odors by combustion may have considerable economic advantages.

Combustion is also a method strictly applicable to the destruction of garbage odors. But as Springhorn[20] has recently shown it is not the only method. The mixture of chlorine with gases given off from garbage or from sewage causes an oxidation of the offensive to inoffensive gases.

A common way of disposing of diffused odors in industry is to pass the odorous air up a chimney against a current of trickling water. The odors then become dissolved and subject to the various treatments applicable to odors in solution. Girardin,[21] however, has proposed that odors be removed by gaseous filtration which he has shown experimentally to be possible. I have not been able to find that this method has had any important application in practice.

There remain a number of diffused smells such as those given off in the manufacture of artificial manures from bones, decaying fish, etc., which have never been successfully dealt with. In these cases removal of the plant to an uninhabited zone must be enforced. Here the odors are lost in the air, either they become oxidized or else they are diluted until they cease to be recognizable.

Nothing has been said of the use of deodorant mixtures. They do not eliminate odors but disguise them. It is often questionable whether the disguise is more beautiful than the naked stench.

The removal of dissolved odors is of the greatest importance because so many rivers in all civilized countries are used as sources of water supply and because there are many unpleasant odors which are not removed by the ordinary methods of water purification.

A common source of complaint is the presence of minute traces of phenol or other coal tar products in drinking water—especially when chlorin is added to the water in the course of purification. Phenol can be "tasted" when present in the proportion of 1 part in 500,000,000 (Baker[22]). A little forethought will often save unpleasant consequences from this odor. Hechner[23] relates that a 100,000 gallon steel tank was cleaned, painted and put into service before the coal-tar paint had properly dried. To the water contained in this tank 0.4 parts per million of liquid chlorin had been added, in addition to one part per million of bleaching powder which was added to the water as it entered the tank. An odor of iodoform and a "taste" of carbolic acid occurred in the tapwater and a positive result was obtained in testing this water for the latter substance. Everything possible should be done to prevent coal-tar wastes from entering the water supply. Frequently it has been found necessary to forbid the discharge of these wastes either into a sewer or into a stream. From a recent report of the Milwaukee Sewerage Commission[24] it is interesting to find that the activated sludge process of sewage disposal is able to take care of condensation liquor from coal-gas plants, without decreasing the biological efficiency of the sludge, provided that this liquor does not constitute more than 2 per cent of the sewage treated.

Another common source of tastes are minute organisms such as synura which live and die in the water. When it is

possible to keep the water underground and so sheltered from light the growth of these organisms can be inhibited. But this is often not possible and then the oily remains of their decomposing corpses form an impurity very difficult of removal. It has, however, been recently demonstrated that chlorine will not only kill synura but will efficiently oxidize their remains.[25]

Oxidation is after all Nature's way of getting rid of offensive smells. There is always enough oxygen in a stream to carry a definite amount of organic waste, such as sewage, without offense. But when a certain proportion of the oxygen is used up in this way, if there is an excess of putrescible material, this will develop mephitic odors and the river will become a nuisance. Dupre[26] is probably very near to the truth in stating that oxygen content of water should not fall below 25 to 30 per cent of saturation. When the oxygen present is insufficient to accomplish its beneficent task more oxygen must be added by aeration and it may be necessary to help the oxidizing process by the addition of some powerful oxidizing agent. Recent installations in the United States include a plant at Virginia Beach[27] for the treatment of well water by chlorin and aeration, and an aeration plant at Danville, Ill., where odors are removed and copper sulphate added to the water to inhibit the growth of organisms which give rise to odors.[28]

The most difficult as well as the most important problem in the elimination of dissolved odors is the problem of removing the putrescible wastes of certain industries. It is found, however, that in many cases the ordinary methods of water purification, applied to the wastes before they are discharged into a river, will result in an inoffensive effluent. Thus Gage[29] has shown that the flax retting industry, of whose evil repute we have already heard, can be made comparatively harmless if the wastes are first subjected to precipitation with lime and alumina and the effluent from the settling basin is passed through a percolating filter. McGowan[30] has indicated methods for applying the systematic knowledge of sewage purification to various trade wastes and Tatham[31] by certain mathematical considerations is able to deduce from McGowan's analytical results the capacity of filter which will be found necessary to obtain a specified degree of purification.

The most notable progress in this field has been achieved through the research work fathered by the United States Public Health Service. Three bulletins,[32, 33, 34] have been published, and are of great value because they describe in detail the somewhat complicated technique which will ensure elimination of putrescible matter from the wastes of the three trades investigated (strawboard wastes, tannery wastes, and creamery wastes). Thanks to the advances of chemical knowledge the elimination of all dissolved odors is an achievement to which we may look forward now with a fair degree of confidence.

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THE RELATIONSHIP BETWEEN THE TUBERCULIN TESTING, VITAMINS, PASTEURIZATION AND THE PUBLIC HEALTH

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NO matter how much we may regret the fact we must acknowledge that the public interest in city milk matters is like the mind of a child. It tends to focus its attention upon a single item, in the complex situation, and while seeing this item it fails to grasp its relations to other factors in the situation. Not only does the public mind have this child-like inability to appreciate the relative importance of things but it also resembles the child in its inability to concentrate its attention upon a single item for any considerable time.

This shifting interest, in the past has rested successively upon skimming and watering, tuberculosis and tuberculin testing, pasteurization, dirt and sediment tests, bacterial content, certified milk, milk filtration, clarification, aeration, pasteurization, dairy farm inspection and dairy score cards, vitamin content, milk filters, and tuberculin testing. Each of these items has a real relation to the milk question and should receive proper consideration but there is a vast difference in their relative practical importance.

The health department which is striving earnestly for a better milk ordinance is most frequently harassed by the devotees of tuberculin testing, vitamins, and pasteurization, each insisting that theirs is the all important angle of the milk question. With the limited funds and limited support available how shall the department proceed to accomplish the greatest good to the public health?

THE TUBERCULIN TEST

No one questions the desirability of the tuberculin test. Every diseased animal removed makes for a healthier, better herd and a more desirable milk supply. The real question is: Does the tuberculin test give sufficiently valuable results to justify pinning our faith and spending our money on this as a protection to the public health?

The first important fact is that the tuberculin test does not cover the field of the diseases spread through milk. It gives no protection except against the spread of bovine tuberculosis. The second important fact is that the tuber-

culin test, even where it is most carefully applied, does not remove all of the tuberculous cows from producing herds. In the herds which have been most carefully supervised for many years by the medical milk commissions, the application of the tuberculin test removes each year from 4 to 10 per cent of these as actually tuberculous animals. The Kings County Medical Milk Commission last year found 3.8 per cent of its 5,000 cows to be tuberculous as demonstrated by the tuberculin test and verified by autopsy records. Essentially this same thing has been found annually for the past twenty years. Last year the Cincinnati Commission pronounced tuberculous 10 per cent of the cows which had been furnishing the certified milk of that city. These figures have been taken from the reports read by these commissions. When such an amount of tuberculosis is present, where the tuberculin test has been carefully applied for years, the tuberculin test can not be relied upon to protect the general milk supply from the presence of the living germs of tuberculosis under the looser supervision which must necessarily surround the ordinary milk supply.

Some one will say that the tuberculin test has been shown to be 98 per cent accurate. This is a correct statement regarding the proportion of condemned animals which have shown on autopsy tuberculous lesions. A cow pronounced tuberculous by a carefully conducted tuberculin test is practically always tuberculous.

However, in connection with the milk supply, our interests are centered upon the cows which fail to react to the tuberculin test and are kept for milk production. Unfortunately no autopsies of these cows can be held and data is lacking to determine how many of them are actually diseased. The experience of medical milk commissions, already referred to, and similar experiences in other herds strongly suggests that the proportion of tuberculous animals missed by the tuberculin test is considerable. During the past six years the cows furnishing Kansas City have been given an annual or semi-annual tuberculin test each year. Approximately 3 per cent of the cows are removed as tubercular. This year eleven cows were thus taken from one herd supplying certified milk, and two of these cows were found to have tuberculous udders.

Accordingly, while the location and removal of tuberculous animals through the use of the tuberculin test makes for a better milk supply, the failure of the test to locate all of the tuberculous animals makes it unsatisfactory as a sole safeguard for the public health. Therefore, in the protection of the milk supply, the application of the tuberculin test is a matter of secondary importance.

THE VITAMINS

The confusion regarding vitamins arises because of the newness of the whole subject and because of the surprising flood of literature which has appeared. While the beginnings of the knowledge of what is now known as vitamins goes back more than a century, they have been before the public only a few years. There has appeared, mainly within the last five years, approximately 3,000 fairly serious papers on this subject and a perfect fog of other contributions.

At present the existence of three vitamins in milk is generally recognized and no one knows how many others will be found. Of these three vitamins, A and B, are fairly abundant in milk and survive the regular pasteurizing treatment. Vitamin C is not very abundant in milk and the addition of fruit or vegetable juices to the diet of the child has long been recommended. Such sources will readily supply all the needs of the child for Vitamin C. Apparently, the ordinary pasteurizing process does reduce, but does not destroy, the activity of the limited amount of Vitamin C in cows milk.

Milk is an important source of Vita-

mins A and B and to a less extent Vitamin C. The apprehension on the part of some, that the pasteurization process seriously injures the vitamins in the milk lacks any adequate foundation in established fact. The actual development of thousands of sturdy children on a diet of pasteurized milk, supplemented by fruit or vegetable juices, is the very best evidence that such milk is well suited to the growth of children.

PASTEURIZATION

If there is any single thing to which humanity in general and this group in particular is committed, it is the development of a supply of safe milk. The tuberculin test and pasteurization are the two procedures which have received most serious consideration as means for insuring the safety of the milk supply.

The tuberculin test has already been discussed and the fact pointed out that it can not be relied upon to guarantee a milk free from the germs of bovine tuberculosis and that it gives no guarantee at all regarding the other diseases at times spread through milk.

Proper pasteurization has been variously defined but a definition in a recent committee report to the International Dairy Inspectors is one of the briefest and I believe one of the best. It defines proper pasteurization as "holding milk at approximately 145°F., never less than 142°F., for thirty minutes, then promptly cooling to approximately 40°F." The amount of pasteurized milk in our cities is increasing rapidly and at present roughly one-half of the milk supply of Canada and the United States is pasteurized.

Among the unpasteurized half, epidemics are being reported at very short intervals while up to date there has not been a single epidemic shown to be spread through properly pasteurized and properly cared for milk.

No one would be quicker to agree that there is much room for improvement in the pasteurizing process as it is too often carried on and we all appreciate that there should be much closer supervision of pasteurizing plants than is commonly practiced. At the same time the pasteurization experience of the past decade demonstrates conclusively that the first great safeguard to be thrown around a milk supply is the requirement of efficient pasteurization.

Viewed from the administrative standpoint this requirement has the added advantage that it is the requirement which can be enforced at the smallest expense to the health department. There is practically no health department so small or so poorly equipped that it can not carry on an efficient supervision of the pasteurization of its local milk supply. Pasteurization is the *beginning* not the *end* of milk improvement.

While the compulsory pasteurization of everything except the certified milk is the logical first step in the protection of a local milk supply, it should be remembered that it is only the first step and should be followed by other steps as rapidly as the local situation will permit.

However, the basic fact should be kept clearly in mind that the proper pasteurization and proper protection after pasteurization of all the milk, other than certified milk, is the most important and logically the first step in the protection of the safety of the public milk supply.

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Make ***your plans to attend the Fifty-second Annual Meeting at Boston***

SOME RESULTS OF NATIONAL CANCER WEEK—1922

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IT is extremely difficult to evaluate, with any degree of precision, the effect of a week's concerted effort in bringing to the attention of the masses some particular public-health problem. The estimation of the number of persons reached during National Cancer Week can only be very roughly made for the results are based, in most cases, on very fragmentary reports. However, some attempt at expression of results can be had from the reports at hand, from newspaper clippings which refer to the various types of activity undertaken, from the number of pamphlets distributed and the like.

No public-health program can be entirely successful unless it has the coöperation of the medical profession and certain it is that the profession as a whole was much more active in 1922 than in 1921 (the first National Cancer Week) and, therefore, the results were much more satisfactory. This was probably due to the fact that the American Society for the Control of Cancer, its aims, and purposes are becoming more generally known to physicians.

With only 146,000 physicians in the United States (most of whom are very busy) to educate over 106,000,000 people, it will be realized what a terrific gratuitous task we are asking of the profession. This would mean that if the population could be evenly distributed among the physicians, and if every physician were available for this educational work, each would have about 725 "students" or the equivalent of the total enrollment in a college of average size.

Mr. F. J. Osborne, Executive Secretary of the American Society for the Control of Cancer, estimated that nearly one-half of the adult population of the United States and Canada were reached in one way or another with useful information; that fifteen millions of people were informed of the early symptoms of cancer through lectures, literature, messages read in the churches, talks in motion picture houses, and the like, and that many millions of people received information through newspapers and magazines.

Certain it is that cancer control was the chief subject of discussion during this week at countless medical society meetings; that many boards of health devoted part or the whole of their publications to discussions on cancer, and that the campaign had a more far-reaching effect than that of 1921.

But the direct measure of the value of the Society's campaign is contained in the query, "How many individuals are coming earlier for examination of suspicious conditions which may be cancer?" Here, again, we are reduced to the roughest kind of estimation. We do know, however, that in certain places, for example, Baltimore, St. Louis and Detroit, where an intensive campaign has been continued over a period of years, that we have very definite statistics to prove that patients are coming to their physicians much earlier than formerly for treatment, and it is the general impression of surgeons the country over that they are now seeing more early cases and fewer advanced cases of cancer than they did twenty or even ten years ago.

It is impossible to hazard even a guess as to the number of individuals who consulted their family physicians either during Cancer Week or some time following, because of information gleaned in one way or another from the intensive educational program. Neither can we know the increased numbers of patients applying for earlier treatment at the various hospitals and dispensaries, either during or following Cancer Week (unless these clinics were especially conducted as a part of Cancer Week activities) as the direct result of the numerous informative activities conducted at that time.

We do know that during Cancer Week there were a great number of public cancer clinics which found their inception as a part of this educational movement. They were held throughout the country and were made possible by the coöperation of the medical profession, but from only a few of the cities in which they were instituted, are reports available at this time. It is almost too much to expect the busy physicians to give nearly a week of their time to such an activity and then to compile a statistical report from the data which they have collected.

For their kindness and coöperation in providing me with the following statistics, I am indebted to Dr. H. C. Saltzstein of Detroit; Dr. A. P. Stoner of Des Moines; Dr. Richard J. Behan of Pittsburgh; Dr. R. B. Greenough of Boston; Dr. Max Burnell of Flint; Drs. E. L. Hunt and Ernest Smith of Worcester; Dr. Edward H. Risley of Waterville and Dr. Mortimer Warren of Portland, Me.

The returns represent but a small fraction of the total work done in clinics during Cancer Week and because of the paucity of the data exact deductions are not warranted, and fine distinctions cannot be drawn. If it were not for the fact that any such records have never before been available, these would be of but very slight value.

From the limited statistics below it will be seen that in the selected population which attended these clinics, nearly seventeen per cent had precancerous lesions and approximately another five per cent had early cancer. The effectiveness of the campaign can be measured by the numbers of these two classes presenting themselves for examination.

If we group the precancerous and early cancer diagnoses, we note that nearly one-fifth of the applicants at our clinics can be reasonably expected to have received advice which will save them from a cancer death and who but for this opportunity would probably be victims of cancer.

If we make the very conservative assumption that only one-half of these potential cancer deaths will be averted by following the advice received at the comparatively few clinics reported above, this will mean that over ninety lives will have been saved by this means alone, because of Cancer Week. It is very difficult to set a monetary value on this type of work but let us assume the usually accepted value of the average human life, namely, $5,000 and if at these few clinics, of which we have records, we have saved ninety lives, that would represent a saving of $450,000.

The table below shows a total of 89 positive cases of early and late cancer applying for treatment. In figuring the

STATISTICS ON THE RESULT OF CANCER CLINICS HELD DURING CANCER WEEK.

(Location of Lesion in which Positive Diagnosis of Cancer was Made.)

City	Total	Pre-Cancerous	Early Cancer	Late Cancer	Buccal Cavity	Stom. and Liver	Perit. Intes. Rectum	Fem. Gen. Organs	Breast	Skin
[illegible], Mich.	321	40	. .	. .	3	0	0	6	10	11
[illegible], Ia.	235	59	8	5	2	1	1	2	2	5
[illegible], Pa.	122	8	8	3	1	1	0	0	0	9
[illegible], Mass.	108	16	17	5	3	1	2	1	2	13
[illegible], Mich.	43	6	1	2	0	0	0	2	1	0
[illegible], Mass.	48	15	3	3	*4	*0	*1	*1	*2	*6
Maine [illegible] Hospital	9	2	3	1	0	0	0	0	0	4
Totals	886	146	40	19+	9	3	3	11	15	42
Per cent of Total Positive Cases		16.5	4.5+	2.1+						
Average					10.1	3.3	3.3	12.3	16.8	47.1

*Not Total.

percentages of cancer in the various anatomical locations, we must omit those given for Worcester because they evidently contain reports of some precancerous lesions also. This will introduce a slight error which should be borne in mind when considering the accuracy of the conclusions.

Let us now compare, making reservations for the errors involved, the percentages of cancer as reported by anatomical location from our clinics with those given in the 1914 special report on cancer prepared at the request of The American Society for the Control of Cancer and issued by the U. S. Government. This latter is chosen because it is the most accurate survey of cancer which has ever been conducted in the U. S. Registration Area.

COMPARATIVE PERCENTAGES OF CANCER IN VARIOUS ANATOMICAL LOCATIONS

	1914 Statistics (Mortality)	Cancer Week Statistics (Morbidity)
Buccal Cavity	4.3	10.1
Stomach and Liver	37.9	3.3
Perit. Intest. and Rectum	12.9	3.3
Fem. Gen. Organs	15.6	12.3
Breast	10.3	16.8
Skin	3.7	47.1
Other Organs and Org. not Specified	15.2	

There are no figures in the tables collected during Cancer Week corresponding to the classification "Other Organs and Organs not Specified" and because of this the percentages from our clinics in all other anatomical locations should theoretically be slightly higher than those given in the comparate.

In comparing the above columns of percentages we are not warranted by the amount of the data available from the Cancer Week clinics in making any statements relative to cancer of breast and of female genital organs. We know that in the past women have been much more receptive to information about cancer, usually secured by lectures before clubs, than have men. Frequently, the subject of cancer of the breast has been stressed somewhat to the exclusion of cancer of the female genital organs, until great numbers of women now know that any lump in the breast is suspicious and requires the immediate attention of a competent physician. Also, these two anatomical groups are in locations which for the most part can be classified under the head of "external" cancer; in which the symptoms and signs can be more definitely taught; attract the patient's attention earlier; admit of easier diagnosis and the like.

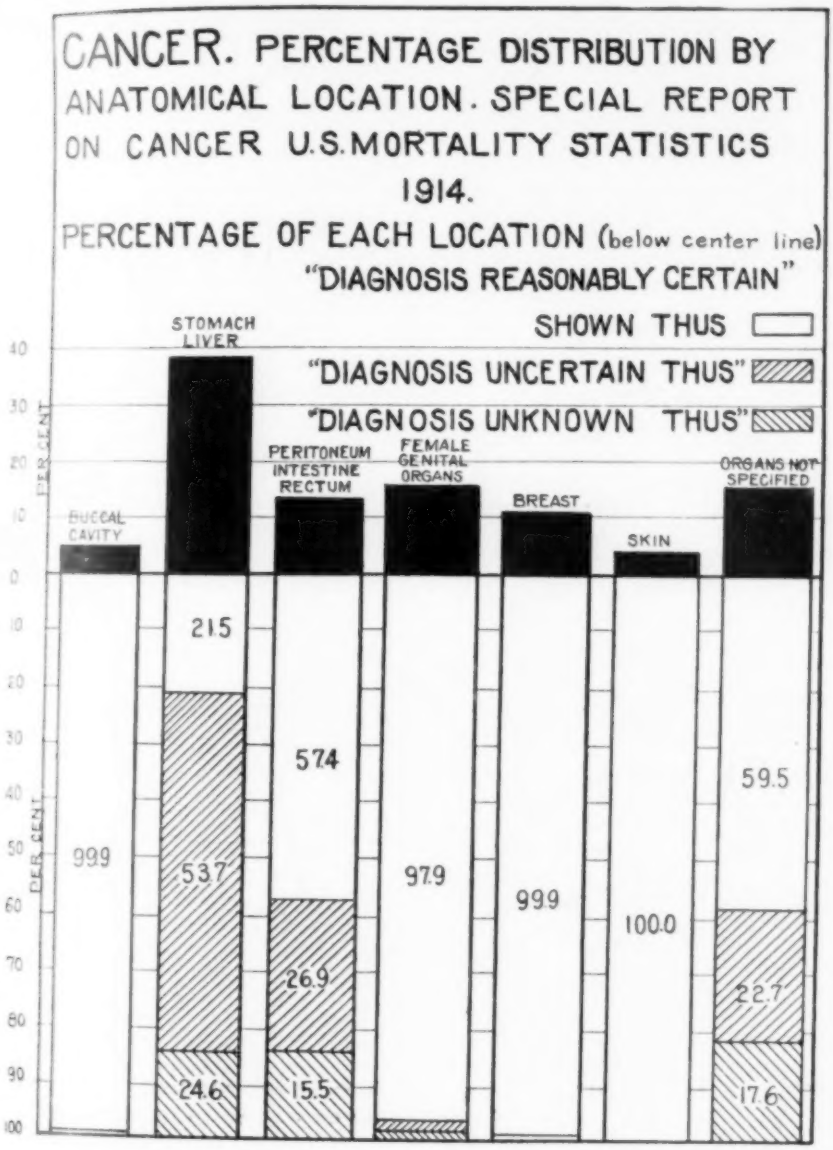
In considering the remaining figures in the table obtained from the Cancer Week clinics, we are immediately impressed with the fact that in two cases our percentages are greatly lower than in the corresponding anatomical locations cited for the 1914 statistics, while two others are very much higher than their 1914 comparates.

These may be collected under the head of "external" (buccal cavity and skin) and "internal" (stomach and liver, peritoneum, intestine and rectum). In both cases great variations from the comparate are noted. In the "external" type the clinic figures are much higher while in the "internal" group the clinic figures are much lower than in the comparate. The greater difficulties in affecting the mortality of the "internal" group as compared with the "external" group must be apparent and the following queries are raised as being relevant to the conditions cited:

1. Are we in our instruction regarding the signs and symptoms of cancer, expending more effort (than the statistics warrant) on "external" types of cancer to the exclusion of information relative to the "internal" types?

2. Because it is much simpler to describe symptoms of skin cancer than cancer of the stomach, are we spending most of our time and effort emphasizing conditions which are relatively unimportant?

3. Do we know the early symptoms of



"internal" cancer definitely enough to accurately inform the laity to an extent that we may be able to reduce the incidence of this type of the disease?

4. With only 2 per cent necropsies and an additional 9 per cent of diagnoses by exploratory or previous operation is there not a great possibility that we are now diagnosing as cancer of the "internal" organs many conditions which are not in reality cancer at all?

5. With a possible error of 78.3 in diagnoses of cancer of the stomach and liver and a possible error of 42.4 in diagnoses of cancer of the peritoneum, intestine and rectum (as shown in the Special Report on Cancer 1914) is the preceding question not highly probable?

6. As pertinent to this last question the accompanying graph (constructed from the 1914 Special Report on Cancer) is shown.

HEMOLYTIC STREPTOCOCCI IN HIGH GRADE MILKS*

WILLIAM DODGE FROST, PH.D., DR.P.H., and FREDA M. BACHMANN, PH.D.

Professor and Instructor, respectively, in Agricultural Bacteriology, University of Wisconsin, Madison, Wisconsin

Read at the annual meeting of the Society of American Bacteriologists, Detroit, Mich., December, 1922.

HEMOLYTIC streptococci are etiologically concerned with some of our most dreaded infections. Hence we would not, at first thought, think of them as being widely distributed in the normal mouth nor present in our best grades of milk, yet such seems to be the case.

The culture medium used in the routine analysis of milk does not favor their growth nor if it occurs is their distinguishing characteristic present. When, however, blood is added to the culture medium they frequently make their appearance even in the best grades of milk. In times of an epidemic such organisms would be looked upon with suspicion if not alarm.

We have recently had occasion to examine the milk of a considerable number of individual cows plated on blood agar and it seems worth while to briefly report the result that we have obtained at this time in so far as the hemolytic streptococci are concerned.

Herds Examined. We examined the milk from each of 412 cows. The first three herds were producing certified milk and were consequently kept under the very best sanitary conditions. The milk is reported to be usually very low in bacteria, *i.e.*, only three or four thousand per c.c. The fourth herd was not kept under quite such perfect conditions, but would be classed as a sanitary dairy. The bacterial content of this milk was usually about 20,000 bacteria per c.c.

Methods Used. A small sample of milk from each cow was obtained by drawing a small amount from each teat into a six-inch sterile test tube. The tubes were packed in ice immediately and brought to the laboratory by special messenger. The analysis was made as soon as the samples reached the laboratory which was about six or eight hours after milking.

The samples were thoroughly shaken and then 2 c.c. transferred to 50 c.c. of sterile water, making a dilution of 1 to 25. This dilution was plated in 1 c.c. amounts. Duplicate plates were made with lactose and with blood agar. The agar used for plating was the 1.5 per cent nutrient agar prepared by the Digestive Ferments Company of Detroit, Michigan, to which was added 1 per cent lactose for the lactose agar plates and 5 per cent horse blood for the blood agar plates. The media were tubed in approximately 10 c.c. amounts. After the agar had hardened in the blood agar plates, the plates were inverted and partially uncovered for a few minutes to allow for the escape of a part of the moisture. The lactose agar and blood agar plates were incubated at 37° C. for 48 hours after which the colonies were counted and their characteristics noted. The blood agar plates were then put in the ice chest for another 48 hours, when the final examination was made.

Types of Colonies. The hemolytic colonies as they appeared on blood agar were distinctly of two types corresponding to the alpha and beta types described by Brown and others. Some plates showed colonies of the alpha type only (Fig. 1). The beta type occurred with less frequency, sometimes alone (Fig. 4) but more often with the alpha type (Figs. 5 and 6).

The form and size of the alpha type varied from microscopic punctiform colonies to circular or biconvex colonies which were plainly visible to the naked eye. Most frequently they were 0.5 to 1 mm. in diameter. The surface colonies were usually circular and the deep colonies more often biconvex, although the smaller deep colonies were often punctiform. To the naked eye the edge of the colony was either entire or slightly "fuzzy." When examined with the 16 mm. objective the edges of those that appeared entire with the naked eye were also irregular. When examined microscopically these colonies were all alike in that the hemolysis was not complete. Next to the colony there were always many corpuscles which were only partially

* Published by permission of the Director of the Wisconsin Agricultural Experiment Station, Madison, Wisconsin.

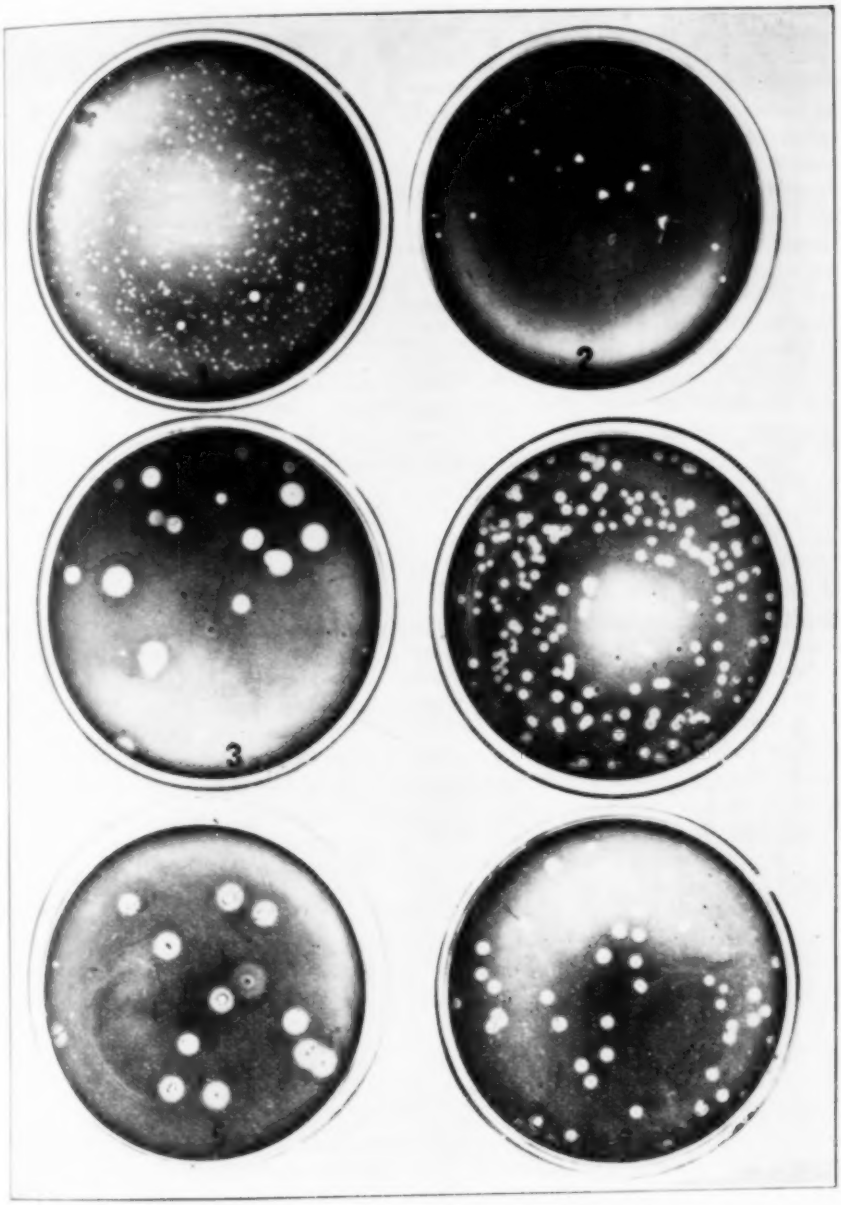


Fig. 1. Blood agar plate showing hemolytic streptococci, alpha type (R 21)
Fig. 2. Ditto (R 58)
Fig. 3. Blood agar plate, hemolytic streptococci beta type (R 60)
Fig. 4. Ditto (W 109)
Fig. 5. Ditto (R 62)
Fig. 6. Ditto (R 50)

or nonhemolyzed while further away hemolysis was complete enough to result in the more or less distinct halo.

The halo with the alpha type of colonies was sometimes absolutely clear, sometimes very indistinct and very frequently well marked, but greenish in color. In size it ranged from almost nothing to a radius of 2 mm. In agreement with the observations of Brown we found that if hemolysis had not taken place or was not marked that it developed upon subjecting the plates to the temperature of the refrigerator for 48 hours. After the plates had been in the refrigerator

the increase in clearness of the halo often resulted in a zonated appearance of the whole with the colony in the center, a zone of incomplete hemolysis next, then a zone of quite complete hemolysis, and then not infrequently a greenish area in the agar. Fig. 5 shows one large alpha colony in which there is still another zone.

Apparently as observed by Brown the hemolyzing substance produced by the cells of the colony diffused through the agar and became more active further away, leaving the partially hemolyzed corpuscles close to the colony. It may be that especially in the temperature of the incubator the cells produce an antihemolyzing substance which diffuses less widely, thus protecting the corpuscles that are next to the colony from complete hemolysis.

The beta type of colony as it appeared on our plates was quite easily distinguished from the alpha type. The colonies may be very small with a large halo as shown in Fig. 3, but later although the halo is unchanged the colony is somewhat larger, sometimes as large as 1 mm. in diameter. The colonies which were punctiform or biconvex were always sharp in outline with a very clear halo. The size of the halo varied somewhat but usually averaged larger than that of the alpha type, having a radius of from 1 to 2.5 mm. When examined microscopically the outline of the colony was entire and it was surrounded by a perfectly clear area with no evident corpuscles. Again in accordance with the observations of Brown, we found no difference in the appearance of these colonies after refrigeration.

No. Herd	No. Cows	Percentage of		Total Hemolytic Colonies
		Alpha Colonies	Beta Colonies	
1	124	19	7	26
2	97	29	18	47
3	144	16	7	23
4	47	8	8	16
	412	18%	10%	28%

Prevalence. Hemolytic streptococci were found in all of the milks examined as shown in the accompanying table.

It will be seen that hemolytic streptococci were found in the milk of 28 per cent of all the cows examined and that the alpha type was about twice as common as the beta type.

Our results compare closely with those obtained some years past by Davis (1916). He found hemolytic streptococci in 85 out of 328 samples or in approximately 26 per cent of all those examined.

More recently Salter (1921) reports on the examination of 14 dairies and finds hemolytic streptococci in 3.3 per cent of them, while Ayers and Courtland (1922) isolated streptococci directly from the udder in 38 per cent of the cows examined, but they do not differentiate quantitatively the hemolytic from the nonhemolytic types.

It seems very evident, then, that hemolytic streptococci are to be found quite constantly in the udders of a considerable proportion of cows, even when kept under the best conditions and with frequent examinations by veterinarians and of the help by physicians. Such milks have been widely used in a raw state without causing disease and may therefore be looked upon as harmless. This does not mean, of course, that forms pathogenic for man may not occur in milk, but how to differentiate them from the bovine forms is another question. Our results as reported here show that hemolytic streptococci do frequently occur in milk of the highest grade and we assume that they in no way affect the health of those consuming such milk.

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Health Talks by Radio.—Nearly 44,000 school children and more than 26,000 employees of shops and factories have received free advice in the last twelve months from physicians through health talks arranged by the Speakers' Bureau of the Brooklyn Red Cross Chapter. In the last year, 34 public health agencies have contributed 169 speakers; the Department of Health has provided speakers for 89 audiences; the Brooklyn Association for Improving the Condition of the Poor, 22, and the Committee for the Prevention of Tuberculosis, 74; the Red Cross has provided for 80 audiences.

EDITORIAL SECTION

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PASTEUR

1823–1895

From every quarter of the globe in which science is revered, reports are being received of the celebration of the Centenary of Pasteur. It is perhaps only natural that Pasteur's contributions to medicine and surgery through the establishment of what was formerly called the "germ theory" of disease should be more widely known and more widely discussed than his other achievements, but his earlier work showed his genius equally clearly and at an age when few scientists have become productive. Before the age of thirty he had established a good reputation in the fields of chemistry and physics, and had been made professor of physics at Dijon, and professor of chemistry at Strasbourg. Observations made while studying the effect of tartaric acid on the rotation of light led him out of these fields and into biology, particularly that branch of biology now known as bacteriology.

It is difficult to say to which branch of science Pasteur contributed most. Unquestionably biology in its broadest sense has profited more by his work than other sciences such as chemistry and physics, probably because biology in its relation to medicine attracted his most earnest attention during the greater part of his life.

Probably the most interesting meetings which have been held in commemoration of Pasteur's Centenary were those in Paris at the Academy of Medicine, the Pasteur Institute and the Sorbonne. Professor Delezenne[1] pointed out that the science of biology had never in its history undergone such a decided revolutionary process as that due to the discoveries of Pasteur. Not only did he benefit medicine in its various branches tremendously but he delved even into abstruse problems such as the origin of living matter. His influence on the study

[1] J. A. M. A., January 27, 1922.

of public health, and disease in general, is of course best known to and most appreciated by the general public on account of the mastery it has given us over most of the contagious diseases, and the passage of time has not led to many advances over the fundamentals first laid down by him.

It is well known that modern surgery is dependent upon his teachings. Professor Delbet expresses his contributions to surgery in a unique way by saying that he gave to this branch "the most splendid gift it had ever received; namely, operative safety." He pointed out another fact which is not generally realized; namely, that Pasteur did not teach antisepsis but asepsis in surgery. His hope for this branch of medicine lay in sterilization by heat, as shown by the following quotation: "If I had the honor of being a surgeon, convinced as I am of the dangers to which the germs that are found on the surface of all objects expose us—more particularly in the hospitals—not only would I take care to use only instruments that are perfectly clean, but, after having subjected them to a rapid flaming, I would use only lint, bandages and sponges that had previously been exposed to hot air of a temperature from 130° to 150° C., and I would use only water that had been subjected to a temperature of from 110° to 120° C."

More remarkable still was Pasteur's vision, for he foresaw what was discovered by others only during the World War in 1915. In the following quotation is clearly outlined the necessity of thoroughly removing dead tissue from wounds, as was carried out during the World War under the name débridement: "But if, under such conditions, a single blood clot or a single fragment of dead tissue remains in some recess of the wound * * * immediately the septic germs will give rise, in less than twenty-four hours, to an infinite number of vibrios through multiplication by cell division, which are capable of producing a fatal septicemia in a short time." In spite of Pasteur's teaching surgeons did not learn this valuable lesson until the necessities of the World War forced it on their attention. No one at the present time doubts its remarkable value in saving life and restoring wounded men to service.

The women of the world owe to Pasteur a debt of everlasting gratitude on account of what he did to make childbirth safe. It is true that in 1843 Oliver Wendell Holmes, in a masterly essay, showed that puerperal fever was contagious and that it followed certain physicians. Four years later Semmelweis made a similar demonstration in Vienna, and recommended the use of chlorinated lime for washing the hands before attending a patient. It was not, however, until Pasteur had demonstrated the influence of bacteria in disease that control of puerperal fever was perfected, and he was the first one to point out the rôle of the streptococcus in causing this frightful disease which at that time caused a mortality ranging from 25 to 50 per cent. In a discussion at the Academy of Medicine on the causes of the epidemics of puerperal fever, Pasteur from his seat interrupted one of the speakers with these words: "The cause of the epidemics is none of these things; it is the physician and his personnel who carry the microbe from a sick to a well woman." The speaker expressed his fear that this microbe would never be found, at which Pasteur went to a blackboard, and drawing a chain of streptococci, said, "Tenez, voici sa figure."

To the members of this Association and readers of this JOURNAL, Pasteur's creation of modern preventive medicine will appeal most strongly. All of us who are engaged in the study and practice of preventive medicine can, with great advantage, even at this late day give time for a study of Pasteur's work and methods. In 1879, while studying fermentations, he found that by covering grapes in various ways he could prevent the introduction of the yeasts which

brought about fermentation, and again showing his wonderful vision he wrote: "Are we not justified in believing, by analogy, that the day will come when preventive measures, easy of application, will put an end to these scourges which, appearing suddenly, bring terror and sadness to a whole people, such as yellow fever and bubonic plague." As pointed out by Calmette, in less than twenty-five years his prophecies had been fulfilled, not only in regard to yellow fever and bubonic plague but also in regard to some other diseases such as Asiatic cholera.

Great as were the benefits of Pasteur's work to the medical profession in all of its branches, none the less great were his services to those engaged in agriculture and stock raising, certain manufacturers, viticulturists, veterinarians and silk growers, and though his discoveries in these various lines benefited particularly one or the other of these callings, they were all based fundamentally on discoveries which are equally applicable in medicine, and those interested in medicine who do not study them carefully lose much that is of enormous value both in method as well as fact.

Pasteur's study of the two diseases of silk-worms which threatened the silk industry of France marked a turning point in his life, leading him into pathology. It was a masterpiece of scientific investigation, as well as a triumph in practical preventive medicine, though undertaken unwillingly and with many misgivings owing to his lack of preparation for such work. Only the request of his old master Dumas made him undertake it. His discovery of the attenuation of the virulence of germs explained Jenner's vaccination against smallpox, and led to the use of bacterial vaccines, though he would doubtless turn in his grave if he could see the reckless and unscientific manner in which these vaccines are being used to-day.

Many of his discoveries were made under the urge of some immediate need of the people of France, but all are of general application and are foundation stones of the superstructure of which we are so proud to-day. Vaccination against hydrophobia is one of his accomplishments best known to the public, and naturally appeals to it more than some other things of equal importance scientifically. Perhaps no more dramatic scenes were ever staged than the meetings at Pouilly-le-Fort in 1881, when the demonstrations of the protective power of vaccination against anthrax were given.

It is small wonder that the people of France when deciding who was the greatest man ever produced by their country should have cast their ballots for Pasteur by an enormous majority. His work was characterized throughout his life by an exalted patriotism, unselfishness and a desire to benefit humanity. Certainly no man has ever lived whose work has been of such enormous value to the human race as regards its welfare and happiness as well as health and life itself. Is it too much to say that Pasteur was the greatest scientist who has ever lived?

M. P. R.

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Make your plans now to attend the Annual Meeting at Boston, October 8th to 11th

EDWARD JENNER 1749-1823

While we are still having meetings commemorative of the 100th birthday of Pasteur, it becomes necessary to observe the 100th anniversary of the death of another great benefactor of the human race, the discoverer of vaccination against smallpox. He was born at Berkeley, in Gloucestershire, England, on May 17, 1749, and died at his home in the same village on January 26, 1823. The greater part of his life was spent in his home village and there, in 1796, he did the first vaccination.

The Lancet[1] has given to the world the first, and up to this time unpublished, summary of Jenner's work, written in his own hand, illustrated with cuts supplied by the Wellcome Museum. Readers are referred to this article for a most illuminating and interesting discussion. The title given by Jenner is "On the Cow Pox. The original paper." There is no evidence that it was ever sent to any society, and in June, 1798, Jenner published his classic treatise, which was an amplification of his first paper, entitled "An Enquiry into the Causes and Effects of the Variolae Vaccinae, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the name of the Cow Pox."

The original paper begins with an observation of the danger which man has brought upon himself by the domestication of animals, given in quaint language: "The deviation of Man from the state in which he was originally plac'd by Nature seems to have proved to him a prolific source of Disease. From the love of splendor, from the indulgences of Luxury, & from his fondness for amusement, he has familiariz'd himself with a great number of animals which may not originally have been intended for his associates."

It is particularly interesting to note that he mentions the disease known as grease in the horse, points out that it is communicable to man, and from man is conveyed to the udders of cows. In man it bears so strong a resemblance to smallpox that he believed it might be the source of that disease. At present we believe that grease is a modification of smallpox instead of the contrary. In this earliest paper he distinctly states that "what renders the cow-pox virus extremely singular, is, that the person, who has been thus affected, is for ever after secure from the infection of the small-pox; neither exposure to the variolous effluvia, nor the insertion of the matter into the skin, producing this malady." He then gives thirteen cases minutely and accurately described to prove his point.

The Centenary of Jenner's death was observed by the Royal Society of Medicine in London, the President giving an address. An oil portrait by Hobday was on exhibition, and the Wellcome Historical Medical Museum showed a number of relics of Jenner. The Wellcome Museum has collected a large number of personal articles, medals, books, manuscripts, engravings, caricatures, and other objects connected with Jenner and his work. These are on exhibition at the Museum, and will remain open to the public for some months.

It is a rather striking incident that on December 27, 1922, we celebrated the 100th anniversary of the birthdays of Pasteur and Mendel. Just a month later comes the 100th anniversary of the death of another great scientific man and benefactor of his race, Edward Jenner.

Few men have ever lived who have benefited their race more than Edward Jenner and it is a delight to honor him.

M. P. R.

(1) The Lancet, January 20, 1923, page 137.

VACCINATION OF INFANTS

In the pages of the *British Medical Journal* recently the question of infant vaccination has been discussed with some warmth. This has been brought about by the opposition of C. Killick Millard, Medical Officer of Health of Leicester, to compulsory vaccination of infants. His chief objection seems to be that smallpox is modified or masked in those who have been vaccinated but not wholly protected, such cases going unrecognized. In answer to the criticism that this is also possible in naturally mild cases of smallpox, he replies that naturally mild smallpox tends to breed true, giving rise to cases with a negligible mortality, whereas smallpox modified by vaccination tends to spread a virulent type of the disease.

In November, 1920, 33 cases of smallpox occurred in Kirkintilloch, 32 of which were infected directly or indirectly by a child of twelve years, unvaccinated, whose symptoms were mild, and whose ailment was diagnosticated as chickenpox. She infected first her five brothers and sisters, all unvaccinated, and her parents, who had been vaccinated in infancy only. These cases recovered, but of the remaining 25, 11 proved fatal. There were 19 cases in persons who had never been vaccinated with 7 deaths, a mortality of 37 per cent. Many cases can be cited of naturally mild smallpox in which a physician is not consulted and the patient goes at large in public places for a longer or shorter time, infecting others with whom he comes in contact. The mild cases cannot be depended upon to breed true.

In one of the replies to Dr. Millard, the following statement occurs: "As I write, I have before me a photograph of a portion of the Gloucester Cemetery showing the graves of 279 unvaccinated children under ten years of age who died in the 1895–96 epidemic, together with *one* child out of more than 8,000 who were vaccinated before or during the epidemic." If any further facts are necessary to prove the value of compulsory vaccination they may be found in a comparison of countries requiring vaccination with those that do not, as seen in the often quoted figures for four years ending 1889.

Compulsory Vaccination

Sweden	1	Deaths from smallpox per million inhabitants.
Ireland	1	
Scotland	3	
Germany	3.5	
England	16	

Vaccination Not Compulsory

Belgium	164	Deaths from smallpox per million inhabitants.
Russia	231	
Austria	510	
Italy	536	
Spain	963	

All power to the hands of those who uphold vaccination and revaccination!

M. P. R.

THE MENTAL HYGIENE CAMPAIGN AS SEEN BY AN INSIDE OBSERVER

In the *Boston Medical and Surgical Journal*, December 14, 1922, there is a timely as well as unusually sane article entitled, "The Mental Hygiene Campaign as Seen by an Outside Observer." This "outside observer," Dr. Bronson Crothers of Boston, reviews briefly the field, object and methods of the proposed campaign in a spirit that is satisfactory to at least one inside observer who has been directly or indirectly connected with the Mental Hygiene Campaign since it first took form and shape. Dr. Crothers' Methods of selecting, as well as presenting, data from a very wide field is excellent. He points out the importance and significance of the work, not only to members of the medical profession but also for the general public. Very wisely he does not try to define exactly the extent of the field covered by mental hygiene, although his references suggest the idea to the mind of the reader that physicians, if they possess the requisite amount of biological as well as common sense, at the present moment have a dramatic opportunity to assume an unusual degree of leadership in directing the course of human events.

The world, as Professor John Dewey[1] reminds us, is sick, mentally sick. Physicians are needed and needed quickly who are competent to recognize mental disorders and to treat them, as well as suggest methods of preventing their spread. In order to do this task successfully, these physicians themselves must be mentally prepared to take a broad biological point of view, in order that they may diagnose correctly the dangers that are actually threatening the existence of organized society.

It would be difficult to conceive of more urgent needs than those now existing for calling the attention of the medical as well as general public to the claims of mental hygiene. The needs are imperative. Fortunately some resources are already available in the field of mental hygiene, which if they are correctly visualized and skillfully applied, can aid materially both in preventing the spread of specific forms of mental diseases, and in reducing the incidence of the kind of emotional disturbances that have actually become a menace to government "of the people, by the people, for the people."

One fact, however, is very clear and that is that members of the medical profession should not remain as indifferent to the claims of mental hygiene as they have been in the past. Charlatans and unscrupulous fanatics taking advantage of this indifference have succeeded far too well in capitalizing irrational interests in the art of directing human motives and impulses to such an extent that, as Mr. H. G. Wells says, a race is on between "education and catastrophe."

Physicians cannot logically hold aloof from taking an active part in the mental hygiene movement on the ground that it is not scientific in its choice or application of methods. The majority of medical men are accustomed only to the use of analytic, but not to synthetic methods. Herbert Spencer in his "First Principles" pointed out what a great handicap it was to the advance of science that so many investigators failed to appreciate the equal importance of both analysis and synthesis. Physicians, particularly those engaged in laboratory problems, have been trained almost exclusively in the use of analytical methods. They focus their attention entirely upon the functions of the different organs, but as a rule they have not paid sufficient attention to the reaction of patients occupied as living

1. The New Republic, January 24, 1923. "A Sick World."

organisms in meeting, overcoming, or succumbing to the actual difficulties of daily life. They have studied man analytically, but not synthetically.

We have reached a stage in our civilization when it is just as important for us to know how Smith reacts emotionally and mentally as a living organism in a given environment to the routine of his daily life, as it is to understand the bacterial flora of his nose, mouth and intestinal tract or watch the effect of physical effort on his circulatory and respiratory system.

In his address, "Some Aspects of Animal Mechanism," Sir Charles Sherrington has called attention to the unfortunate effect that "the keeping of mind and body apart for certain analytical purposes" has in the development of a mental attitude that makes it difficult or impossible to assess as a whole the life of any animal from the lowest to the highest. Unfortunately, so many physicians have accustomed themselves either to draw a sharp distinction between body and mind, or to ignore entirely the latter, that they find it unnecessarily difficult to get any comprehensive ideas about the forces directing the organization of the human personality.

These sins of commission, as well as of omission, often lead to disastrous results. They have not only prevented the organization of a much more effective campaign to prevent the spread of mental disorders, but they have kept physicians from realizing that the first and most important act in the fight against physical disease is the proper adjustment of mental processes so as to focus attention and facilitate the use of reason.

In order to make as rational and effective efforts as possible to prevent diseases both physical and mental, physicians and the general public should be familiar with the laws determining rational thought and action. The struggle against physical diseases will enter a new and more promising era when the assistance that can be given by mental hygiene is more generally recognized and accepted.

S. P.

MORE POLITICS IN THE HEALTH OFFICER

In a recent article by Dr. Vincent[1] of the Rockefeller Foundation, the following appears: "In one sense public health ought not to be taken out of politics. Health protection is a concern of the community in its organized capacity and ought to be regarded as one of the common tasks. The public health officer should welcome an opportunity to educate the people to the support of wise measures for promoting the common welfare. As a public servant, he should understand men as well as microbes and be a politician in the older and better sense of the word."

The counsel is yearly becoming more applicable, for public health is becoming more and more a question of teaching the individual and of inducing him to help himself. The time is rapidly passing when the chief duty of the health officer is to provide a healthful environment for the individual, for the environment is rapidly coming under control. The best health officer to-day is he who is a "vulgarizer," to use Dr. Winslow's expression. He is the man who is able to express to the public the message of the health department in a way that will win cooperation. Perhaps the two most important qualities in a successful health officer are capacity for public leadership and scientific knowledge of public health, and it is safe to say that of these two the more important is the first.

[1] "Public Welfare and Public Health," by Dr. George E. Vincent, in the Annals of the American Academy of Political and Social Science, January, 1923.

It is quite possible for a man who is technically untrained to employ technical workers as bureau chiefs, upon whom he can draw for the information which he lacks. In fact, many of our successful health officers have been physicians untrained in public health, who, through the force of public leadership alone have accomplished great things. The reverse, however, is not true: Technical training and experience alone will not carry even the most gifted scientist over the rocks of political difficulties if he does not understand men and so is unable to carry them with him.

Those upon whom falls the responsibility for selection of health officials would do well to keep in mind this necessity of capacity for leadership. Schools of public health, likewise, cannot impress this lesson too strongly upon the minds of students. A course in public relations would seem as necessary to the curriculum in a public health school as a course in vital statistics or epidemiology. Training alone will not, of course, produce a leader any more than vocal training alone will produce a Caruso, but many a health officer of indifferent success can be made more successful through concentration upon the art of dealing with men as individuals and in groups. Democracy is here to stay, and that being the case, the public and its representatives must be won over to every step of importance in the public health program. While, therefore, we should do all in our power to protect public health from vicious political influence, there can be no such thing as taking it out of politics. As pointed out by Newton D. Baker at the Cleveland Annual Meeting of the American Public Health Association, the solution is to put more good, clean politics, of course, into the health officer. A. W. H.

FILLED MILK

There is at present before Congress a bill prohibiting the shipment of filled milk in interstate or foreign commerce, declaring it to be an "adulterated article of food, injurious to public health, and a fraud upon the public." This bill has already passed the House and gone to the Senate accompanied by a report recommending the bill with slight changes.

Filled milk is a compound made up of skimmed milk to which 3 or 4 per cent of cocoanut oil is added. It is then condensed to approximately one-half of its bulk.

Our interest in this bill lies in the effect of such a compound on the public health. Both sides are represented by legal counsel, and the hearings before subcommittees have been characterized by controversies which are not at all scientific, and which indicate that public health is one of the least considerations involved. It is charged that the whole matter is a trade fight between two large milk companies, one of which is putting out filled milk in addition to its other business, and it is almost impossible to read the transcript of these hearings without gaining the impression that this is a fact.

As far as the injury to public health liable to be done by filled milk is concerned, the discussion centers largely around the vitamins and particularly fat soluble "A." In the report made to the Senate it is stated that "even tuberculosis may be traced to lack of vitamins in the diet." In view of such statements one can hardly deny the charges made that there is a great deal of "vitamin hysteria" at the present time.

Needless to say, women have taken part on both sides and some of the most untenable statements are made by them. One who qualifies as a nutrition expert

employed by the Dairyman's League Coöperative Association, says: "We are not measuring our food in calories any more." "You don't want any more heat on a day like this." Another, speaking of a certain brand of filled milk, says: "Yet this is but 15 or 20 cents worth of poison." Even some of the physicians who qualify as experts make untenable statements. Certainly hearings before committees are not places in which to get scientific facts, although the discussions are often interesting and illuminating.

Certain dairymen's associations are supporting the law. As far as the dairy trade goes, we are only incidentally interested, but it is well to remember that in the past, laws protecting the dairymen have not usually been made with much regard for the public. The bill which taxes oleomargarine, and puts a prohibitive tax of 10 cents a pound on colored oleomargarine, is still in force, though nothing can be said against oleomargarine from the public health standpoint. On the other hand butter makers universally color butter, and it is taught in the agricultural colleges throughout the United States. The addition of one or two mills worth of artificial color adds nothing to the nutritive value of butter, yet it makes a product which is unsalable as butter, or at best salable at low prices, sell to the consumer at the price of good butter. Just why this should not be considered a fraud is not easy to say, but it is sanctioned by the law of our land in the interests of the dairymen.

Our Government also insists on the misbranding of the vegetable fat butter substitutes as oleomargarine, though they bear no relation to that product further than the fact that they are substitutes for butter. It also sanctions the sale of renovated butter, than which there are few more repulsive articles of food.

Considering this matter from the public health standpoint, we admit without discussion that the normal milk of any animal is a perfect food for the young of that species; that some sort of milk is the best substitute for human milk, though cow's milk is very far from being a perfect food for infants; that cow's milk is perhaps the best source of vitamin "A," and that this is contained largely in the fat content. The experiments of Hess indicate that skimmed milk can furnish nutriment for infants over long periods of time, and the conclusion either that vitamin "A" is not as necessary for these infants as experiments on rats seem to indicate, or else that skimmed milk contains a considerable proportion of this vitamin seems to be justified. In testimony before the subcommittee Dr. McCollum has laid great stress on the fact that as a nation we are undernourished. Referring to faulty bone development, as pointed out by Hess, defective teeth and lack of normal weight, he at least indicates that these are due to lack of vitamin "A," since they are used as arguments against filled milk. His own experiments indicate that skimmed milk contains about one-half the vitamin "A" that whole milk does, or in other words that the butter fat contains about 50 per cent of vitamin "A," and the other portion of the milk 50 per cent, so that from the public health standpoint, as presented by the proponents of this bill, the whole fight is over 50 per cent of vitamin "A."

It is hard to understand just why the dairymen have become involved in this fight, since it opens up a new and advantageous market for skimmed milk. Skimmed milk is a valuable food, corresponding in its value closely to lean meat. It contains all the protein and has a high caloric value. The waste of skim milk in this country is a crime. The Department of Agriculture[1] estimates that the

(1) Testimony of Prof. E. E. Aggar, page 148.

amount of skimmed milk represents annually a protein value of 913,000,000 pounds, approximately equivalent to 8,000,000,000 pounds of beef, which is said to nearly equal the annual consumption of beef in this country.

A large amount of this goes into the making of paints, billiard and pool balls, buttons, brush backs, etc.[2] Dr. Carlson, of Chicago, points out very properly that the waste of all this food material is a very serious public health problem, in which everyone will agree who studies the question.

If filled milk is sold as whole milk—and we are quite ready to admit that this occurs sometimes—it is a matter which should be dealt with as a fraud just as are other food adulterations. From the testimony given by some of the investigators, who dressed a girl in poor clothing and sent her around to various groceries, it would not seem hard to collect the evidence.

The public should not be deprived of this valuable food product, which is digestible and nutritious although not a complete food, because in some instances such a product is sold as whole milk. Cheese made from skimmed milk or partially skimmed milk is extensively used as a diet in various parts of the world. In the United States cheese is not used as a substitute for meat as much as it should be. The skimmed milk which now goes for manufacturing various articles might well be made into skimmed milk cheese and sold to the vast number of people in the United States who need a cheap source of protein. It would be just as rational to exclude from interstate trade all of the vegetable oils, cotton seed, peanut, corn and cocoanut oil, as it would be to condemn a condensed milk in which the butter fat was replaced by these vegetable oils. Many of the shortening and cooking compounds are made from the vegetable oils, and have been used for years without any detriment to the public health as far as the evidence shows.

We are in full sympathy with the dairy interests of the United States, and have repeatedly urged the more extensive use of milk and will continue to do so. We have no sympathy with the sale of oleomargarine as butter, nor the sale of filled milk as whole milk, but as said before, most states have machinery for dealing with such frauds. Even when whole milk is bought the cream is sometimes removed and the skimmed milk used as food. If all food stuffs in the manufacture and sale of which frauds have been or can be committed were excluded from trade, there would be a decided food shortage, and milk itself would be among the first to be debarred, since there are few articles which have been more adulterated, and none which require more constant attention from inspectors and health officials.

The original bill excluded from interstate trade such preparations as Dr. Gerstenberger's "S. M. A." Since it has been demonstrated that this is an excellent substitute for milk, although it contains vegetable fats and cod liver oil, a compromise has been effected so that this compound will be admitted to trade.

It has not been shown by anyone that there exists in this country a vitamin "A" starvation, nor has it been shown that the sale of filled milks and butter substitutes has increased the malnutrition of our people. It is admitted by all that whole milk varies in its value according to the food of the cow, and that babies nursing from their own mothers frequently suffer from some of the deficiency diseases due to the poor quality of the milk. With these facts in mind is it wise or just to prohibit the sale of filled milk, because of its deficiency in vitamin "A"? Certainly the public health argument has no standing in the case. M. P. R.

(2) The production of dried casein was 20,000,000 pounds in 1922.

1922—A GOOD YEAR

General death rates measure in a broad way the healthfulness of the passing years. The best year on record in the United States was 1921. In that year 11.6 per 1,000 population was the death rate for the 87,000,000 people dwelling in the registration area. The lowest previous rate was 12.9 in 1919 and the highest rate in the annual Mortality Statistics, compiled by the Bureau of the Census, was 18.1 in 1918, the year of the influenza pandemic.

The year 1921 furnished the following record low rates:

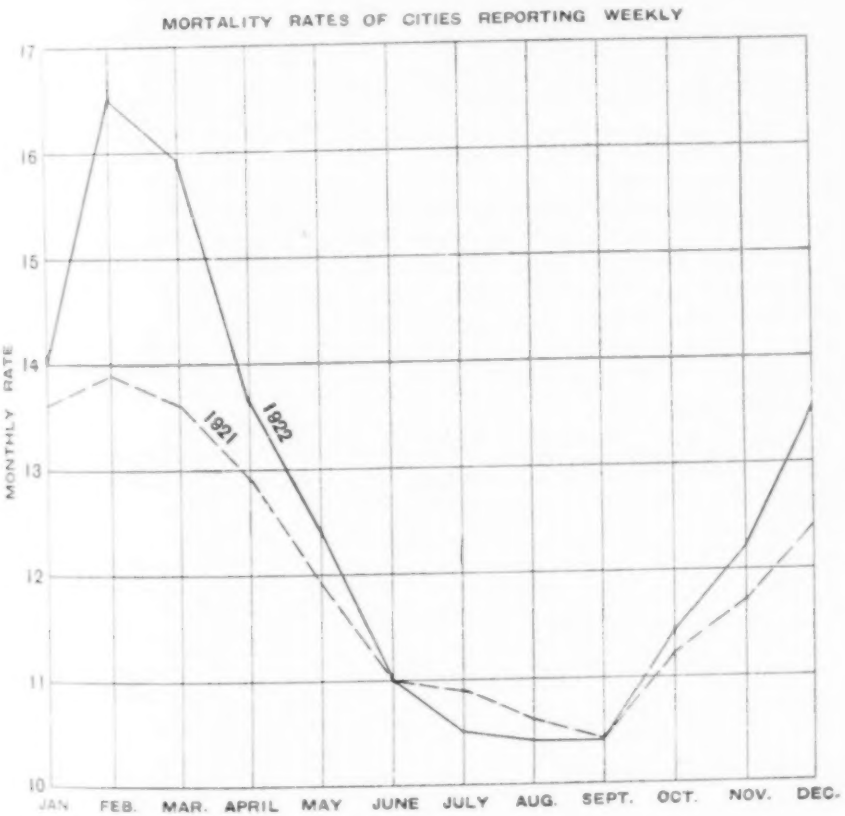
DEATH REGISTRATION AREA:

Death rate from all causes 11.6 per 1,000 population.
Death rate from Tuberculosis (all forms) 99.4 per 100,000 population.

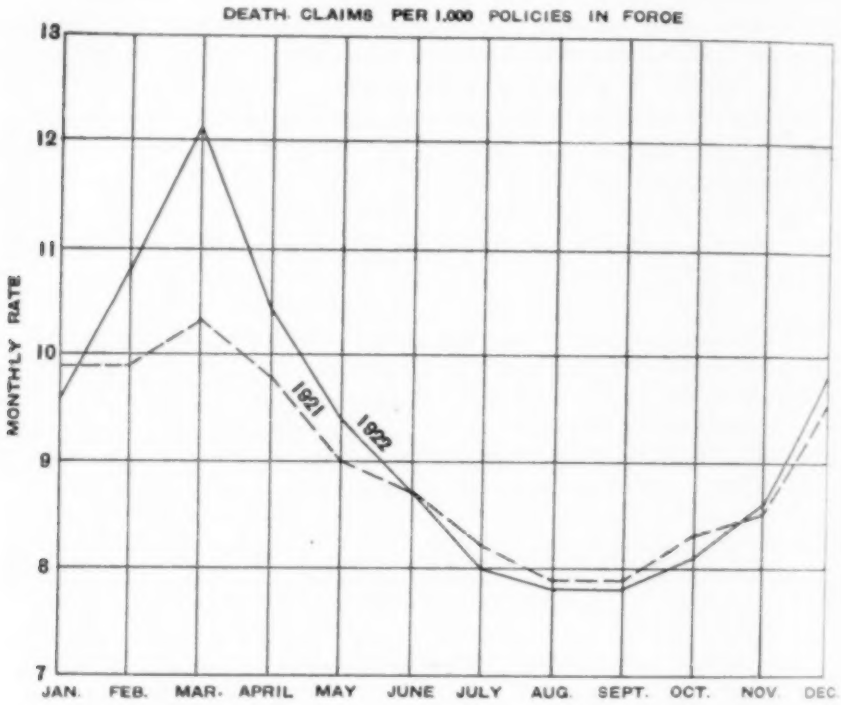
BIRTH REGISTRATION AREA:

Infant mortality rate 76 per 1,000 live births.

Did 1922 also furnish any record low rates? Final figures for 1922 are not yet available, but the following graph of rates based on weekly telegraphic reports to the Bureau of the Census from large cities having an aggregate population of 28,000,000 clearly shows that the rates of 1922 for the most part followed closely those of 1921. Although influenza and pneumonia were responsible for higher rates in February and March and pneumonia again contributed largely to the



higher rates of November and December, the effect of these higher rates to some extent was counterbalanced by the exceptionally low rates in 1922 for months of July and August. In fact the summary of the weekly reports gives the 1922 rates for 62 cities as 12.5 against 12.1 in 1921.



Corroborative evidence that the mortality rate for 1922 was not much above the rate for 1921 is found in the graph of death claims per 1,000 policies in force, based on weekly telegrams to the Bureau of the Census from the industrial insurance companies. The 1922 line follows closely the line of 1921, and for 1922 the annual summary shows 9.2 death claims per 1,000 policies in force against 9 per 1,000 for 1921. As the average number of policies for each of these years was between forty-five and fifty million, the importance of this corroborative evidence may be readily appreciated.

Available figures, therefore, indicate that the mortality rate for 1922 was only fractionally higher than the rate for 1921, and warrant the conclusion that 1922 was a good year, second only to the record year 1921. W. H. D.

HEALTH OFFICERS' EXCHANGE

THE PSYCHOLOGY OF RURAL PUBLIC HEALTH

Tuberculosis contracted from the family cow.—Ten years ago Mr. W. D. Odom, of Columbus, Georgia, did not believe that the milk from his cow, which was known to be tuberculous, could infect his family. To-day his wife is dead, his son is suffering a permanent disability, and his two daughters are in a tuberculosis sanatorium, all having been infected by drinking milk from the family cow. Mr. Odom makes the following statement:

"In the fall of 1912 the dairy herd of Mr. O. H. Hightower was tested for tuberculosis by Dr. W. M. Hinell, and two cows were put out of the dairy. One was killed as a reactor and one was called suspicious and the suspicious cow was taken to my premises and milked. I felt that the office of Milk Inspector was a graft, to give some man an easy job, and did not believe that there was any such thing as tuberculosis in cows. This cow was fed, just as those in the dairy were fed, and in one month she looked so bad that I was afraid to milk her. She was given back to Mr. Hightower.

My son, Jesse, developed tuberculosis the next year and has had it until the present time (about nine years) and my wife, I believe, contracted it from the boy. The boy was kept in the hospital at Decatur, Georgia, for four years, and on his back for nine months, where part of the bone of the neck was removed and a part of the leg bone used to replace it, and the bone of a sheep used to replace the leg bone.

My two daughters are now in the tubercular hospital at Alto, Georgia, and I believe that they contracted the disease from their mother, who was buried here to-day."

It will be observed that Mr. Odom was one of those individuals who subscribed to the belief that the principles of preventive medicine are without foundation, and to prove his faith in his own conviction he had his way in spite of the advice of the state and federal meat inspectors. The reacting cow was later killed and Mr. Odom himself admits that she was practically "eaten up" with the disease.

Mr. Odom's son Jesse, whose photograph is shown, is seventeen years old and weighs fifty-one pounds. Nine years ago he weighed fifty-five pounds. He spent four years in a hospital for crippled children and was discharged when he reached the age of fifteen, and during this time underwent two operations of bone transplanting. He can walk very well now, but will never be able to do much work.

Mrs. Odom suffered for seven years with tuberculosis, and bore her misfortune with Christian fortitude, and said many times that she hoped no one else would have to suffer as she had. This statement was the chief reason for her relatives giving their consent to the publicity and they readily consented to help assemble the facts that would tend to warn others of the danger of the *Tuberculous Cow.*

Mrs. Odom's mother is in possession of a photograph showing five generations of her family. Her grandfather lived for ninety-one years, and her father died at sixty-six. Mrs. Odom's mother looks to be not over forty-five, and has married grandchildren, and nothing can be found to indicate that there ever has been any tuberculosis in the family until the milk from this cow was used. On the other hand, everything that can be learned tends to show conclusively that the entire trouble started from the cow.

This investigation has been made by the Board of Health of Valdosta in coöperation with state and federal veterinarians.

E. D. KING, JR., D.V.M.
Meat Inspector,
Board of Health, Valdosta, Ga.

THE INDIVIDUAL ROOM ISOLATION PLAN

The medical director of a school system finds himself engaged in a constant campaign of watchfulness against contagious disease. None of us lack respect for measles, yet we have a far greater fear of certain other diseases, such as diphtheria and scarlet fever. Fortunately, most parents agree with us, at least in their fear of the two latter diseases. None of us wish to interfere with school attendance any more than possible nor, on the other hand, do we wish to permit an epidemic to gain headway through the medium of the schoolroom. For these reasons I have adopted a plan which I call *Individual Room Isolation*. As far as I know the idea is original but, like everything else, it is probably known to some others.

Assuming a case of contagious disease is discovered in the schoolroom, the child is at once excluded and all legal requirements covered, the other children are sent home for the remainder of the twenty-four hours or are transferred to another empty room if available, this being cleaned later, according to the conditions existing in the individual school. Marked contacts are also excluded. However, usually the disease is discovered in the prodromal stage and diagnosis is not confirmed for several days, we being notified through official channels upon absolute diagnosis.

The child's books and other desk property are removed by the janitor and kept isolated for possible destruction or burned at once, depending on the sureness of the diagnosis. The desk and adjacent seats and floor are thoroughly cleaned with soap and water, a disinfectant being used if the janitor desires, one of the phenol type being selected. The room is then closed to all and aired for the remainder of twenty-four hours.

The Isolation Plan is then begun as follows:

(1) The children of the room are expected to enter the room immediately upon arrival at the school.

(2) All their exercises are conducted in that room only, they being kept out of contact with other groups.

(3) Thorough inspection of each child is made daily and the teacher is also instructed to keep up a constant watch for early symptoms. She is given special information regarding what to look for, also as to special methods of protecting herself.

(4) Recesses are held at different times from other rooms and the room is dismissed either slightly earlier or slightly later than the rest of the school.

(5) This process is continued during the incubation period of the disease in question.

(6) Wraps are so placed that no contact with the coats, etc., of other rooms can take place.

(7) The day of release all children are given an unusually thorough examination.

(8) It will be noted that the only contact during school with other children is through the toilets and this is said to be a negligible matter.

Regarding absences in the room it should be said that the parents locally are trained to notify the school early regarding cause of absence. Others are checked up without delay.

The method has been successful as far as we can determine, since in the number of times it has been used, no contacts seem to have taken the disease where traceable to the room.

In case the child has left school for several days before any knowledge of sickness exists in the department, the plan is similar except that the children are not kept out or transferred to another room for the first twenty-four hours.

This plan in no way violates any legal requirements, has been successful in its brief career locally, and has met approval when discussed with persons of considerable experience in school and public-health work.

One must always recognize in any campaign against contagious diseases that we have control of the child only part of the day and that unless quarantine measures are conscientiously observed by parents and children, infection is bound to take place under conditions beyond the school's control.

In presenting this technic, I believe it is a thoroughly practical and absolutely simple one, offering a maximum of control and protection, giving the best opportunity of watching possible contacts without danger to other scholars, and with the minimum disruption of the educational schedule.

H. G. ROWELL, M.D.,
Director of Health and Hygiene, School Dept., New Bedford, Mass.

THE NEXT STEP IN COÖRDINATING STATE VOLUNTARY HEALTH WORK

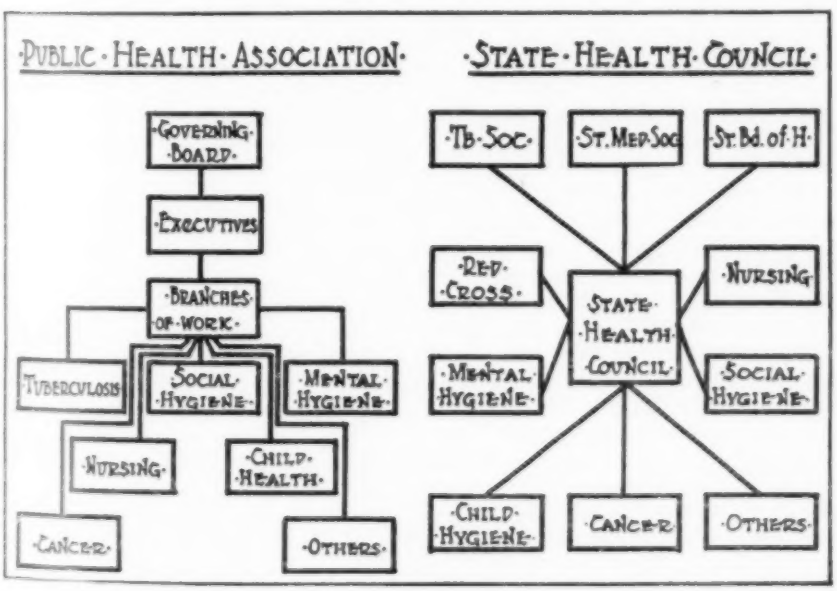
WALTER CLARKE,

Administrative Secretary, National Health Council

The coördination of state-wide voluntary health agencies is as much a matter of interest to national health organizations as the coördination of national agencies themselves can be. National agencies depend upon local agencies for the ultimate execution of vital programs, and since eventually all effective public-health work is applied to individual men, women and children in their homes or in their places of work or play, it is the policy of the National Health Council to promote mutual understanding and helpfulness among state-wide health agencies—these agencies being the intermediary organization between the national bodies and the local bodies.

There are two typical forms of organization for coördinating state health work, namely, public health associations and state health councils. The public health association, as generally understood, is created by the *consolidation* of existing voluntary health societies under one definitely governing body, or by the elaboration of a single society to engage in all vital phases of public-health work. All the operations of a public health association are under one executive head who directs all phases of work. The state health council, on the other hand, is a *federation* of autonomous agencies in a union which does not impair their respective independence. The union is not for the purpose of government but for the promotion of understanding and helpfulness. This distinction between the accepted conception of a public health association and a state health council is shown in the diagram below.

The number of difficult unsolved problems in the way of the state public health association has led the National Health Council to adopt a cautious policy toward the promotion of such organizations. With regard to them the Council is in the position of a sympathetic observer. On the other hand, the National Health Council is ready to promote, in such judicious ways as may be suitable, the establishment of state health councils modeled after the National Health Council itself. State public health associations may in time grow out of state health councils and may prove to be the most economical and efficient way of coördinating and carrying on public-health work in the several states but it is



believed that this process will, in the typical case, be a gradual one extending over a number of years.

Among the apparent difficulties in the way of state public health associations a few of the most conspicuous are the following:

(1) The lack of a national organization parallel to the state public health association.

(2) The lack of a sound and successful method of securing funds.

(3) The weakness of the "public health appeal" as compared with the specialized appeals, such as the tuberculosis appeal, the social hygiene appeal, etc.

(4) The disinclination on the part of specialized independent state-wide health organizations to be merged in a general public health organization.

It might appear, on first consideration, that states which have but one or two strong voluntary health agencies (frequently a tuberculosis society and Red Cross chapters) do not provide a suitable situation for a state health council, as it would appear a simple matter to elaborate existing organizations to cover the entire field of public health. This has been attempted in several cases with somewhat varying results. In a state where only one or two voluntary state-wide health agencies exist it is still best, in most, if not all, instances, to organize a state health council, of which the State Board of Health, the Medical Society, the State Association of Nurses or Public Health Nursing Association, the Red Cross, and the State Tuberculosis Association, should be members, with the official body preferably in an advisory capacity. Each member should have a single representative in the Council empowered to give, and take, mutually helpful advice, to "lay all the cards of his organization on the table" in order to avoid interorganization competition and duplication, and to promote common interest enterprises, such for example as joint annual meetings, joint offices, joint publications, joint educational campaigns, etc. While observing with the utmost sympathy and interest the experiences of existing state-wide public health associations the National Health Council is elsewhere positively encouraging state health councils based upon the principles described above. The state health council appears to be the next reasonable step in the direction of coöperation and coördination.

THE PSYCHOLOGY OF RURAL PUBLIC HEALTH

Many of our eastern villages are inhabited largely by retired farmers, who through frugal habits and honest dealings have earned an easier life for their declining years. These men are of sterling character and pride themselves on their integrity and fairness. Their word is considered as good as their bond—they have been accustomed to settle their difficulties as man to man without the aid of the Law. Their impressions of the courts have been gained largely through the daily newspapers, the columns of which are filled with sensational accounts of murders, divorces and all kinds of crime. They regard it as a disgrace to be sued; to be haled into court is a reflection on their character which calls for a most vigorous defense. They have little sympathy with many of the sanitary regulations of cities, yet they have a wholesome regard for the authority of the State in dealing with such matters. They are accustomed to open business dealings; mysteries and secret methods greatly disturb them. With these people, either as individuals or as municipalities, it is a mistake to resort to process of law until all diplomatic methods have been tried. As an illustration:

A few years ago the water supply of a third class city was thought to be contaminated by drainage from one of these villages. The sewage from the municipal buildings and homes was allowed to drain into a small stream which flowed into the lake which was the source of the water supply of the city. An action was brought by the city to restrain the village from continuing the drainage of sewage from one of the municipal buildings into the stream with the hope that this action, if successful, would serve as a test case. The action was bitterly fought for several years and finally resulted in a small judgment being rendered by the court in favor of the city. The inhabitants refused to accept this as conclusive. This action cost the city thousands of dollars and accomplished practically nothing.

The courts having failed, I was asked to try to adjust the matter by other means. I therefore, arranged for a conference with the city Water Board and requested that the local papers be given a notice of this meeting. The papers sent reporters to the conference who

were requested to retire as the session was to be a secret one; this served to give a mysterious aspect to the meeting. The impression was also given out that the state would enforce the abatement of the drainage into the lake. At the conference I advised that one of the more cooperative prominent citizens of the village, the sewage from whose house found its way into the stream, be consulted and advised to construct a concrete vault according to certain specifications, and if he did this the city would pay one-half the cost of construction. The construction was immediately begun. Interest in this work was at once stimulated among others, who, on learning of this agreement, requested similar concessions from the Water Board. Accordingly, upon my advice, the Water Board adopted a resolution granting this privilege to all the citizens who would complete this work within six months. The result of this action was that the drainage from all the premises, more than 60 in number, was properly cared for within the specified time with only a fraction of the cost to the city which the lawsuit had entailed.

F. W. SEARS, M.D.,
Sanitary Supervisor,
State Dept. of Health, Albany, N. Y.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Health Officer for City of Savannah, Ga. Salary $4,800 per annum. Automobile furnished. Guaranteed free from political interference. Position to be filled by examination under supervision of the United States Public Health Service. For additional information write Assistant Surgeon-General W. F. Draper, Washington, D. C., or Dr. Herman W. Hesse, Chairman Health Committee, City Hall, Savannah, Ga.

Wanted: A nurse having training in prenatal and infant work, for a city of 17,000. State training, experience, salary expected and when available. Health Officer, Board of Health, Berlin, N. H.

Wanted: Superintendency of 40 or 50 bed tuberculosis sanatorium by graduate registered nurse. Excellent financier, experienced executive, competent to purchase for, organize and conduct economically all departments. Address 243 W. H., care of this Journal, New York address.

POSITIONS WANTED

Positions wanted announcements will be carried in this column. The charge is $2 per insertion. Copy should be received at this office by the 8th of the month.

Wanted: An assistant professor of bacteriology who could also instruct in pathology. The work for the first year would be the handling of laboratory sections in bacteriology, mainly. The salary and title would depend upon experience but would not exceed $2500 to begin with. Advancement dependent upon experience and ability, especially in research. The position is in a far western university with an enrollment of 5000. Address Bacteriological Department, University of Washington, Seattle, Wash.

Wanted: Position as public health executive. Extensive experience, particularly in child health. Capable of conducting health program for public or private organization. Experienced in organization, publicity and public speaking. Unexcelled capacity for achieving successful results. Married. Holds recognized M.D., C.M., degree. References exchanged. Address 242 S. W., care of this Journal, New York address.

FOR SALE

Automobile Infant Welfare Station (General Motor ¼-ton truck), equipped with running water and tent. Condition good. Price $600, F.O.B. Cleveland. Write to Babies' Dispensary and Hospital of Cleveland, 2500 E. 35th Street.

ASSOCIATION NEWS

LIST OF MEMBERS

Proposed for election to the A. P. H. A., February 1 to February 28, inclusive

Names of Sponsors are set in **Bold Face Type**

Names of New Members are set in Light Face Type

CALIFORNIA

Walter M. Dickie, M.D., San Francisco, Calif.
W. Leathers Mitchell, M.D., Santa Ana, Calif., Co. Health Officer.

MASSACHUSETTS

Arthur McCormack, M.D., Louisville, Ky.
Sophie C. Nelson, R.N., East Boston, Mass., Full-Time Nurse.

MISSISSIPPI

C. C. Applewhite, M.D., Jackson, Miss.
W. D. Beacham, M.D., Hattiesburg, Miss., Full-Time Health Officer.

NEW YORK

Victor C. Meyers, M.D., New York, N. Y.
Vincent Christina, Ph.C., New York, N. Y., Bact.-Chemist, Lab. Dir.

OHIO

E. R. Hayhurst, M.D., Columbus, O.
M. V. Replogle, M.D., Bryan, O., Co. Health Officer.

PENNSYLVANIA

E. R. Hayhurst, M.D., Columbus, O.
A. W. Colcord, M.D., Clairton, Pa., Part-Time Surg., Carnegie Steel Co.

VIRGINIA

E. C. Stoy, U.S.P.H.S., Pulaski, Va.
M. Lee Hawley, Richmond, Va., Staff State Board of Health.
J. Lashley Johnson, Pulaski, Va., San. Off., F.A., U. S. P. H. S.
J. F. Ward, F.A., U. S. P. H. S., Marion, Va., Field Agent.

ASSOCIATE MEMBERS

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Louis R. Serensky, Indianapolis, Ind., Gen. Mgr., National Motion Pictures Co.

NEW YORK

Boothe Colwell Davis, Ph.D., D.D., Alfred, N. Y.
A. Guiglia, Alfred University, Alfred, N. Y., Student of Medicine.

LIST OF A. P. H. A. FELLOWS

Following is a supplementary list of Fellows of the American Public Health Association elected at the Cleveland meeting whose confirmations were received since publication of the March issue.

PUBLIC HEALTH ADMINISTRATION SECTION

James A. Beer, M.D.,
City Board of Health, Columbus, Ohio.
R. W. Bell,
Provincial Board of Health, Toronto, Can.
Robert H. Bishop, Jr., M.D.,
1259 Leader-News Building, Cleveland, Ohio.
Henry Boswell, M.D.,
Sanatorium, Miss.
P. D. Brooks, M.D.,
Delmar, N. Y.
Lawrence Brown, M.D.,
Saranac Lake, N. Y.
E. H. Bullock, M.D.,
City Health Officer, Kansas City, Mo.
Edward Clark, M.D.,
State Supervisor, State of N. Y., Buffalo, N. Y.
W. F. Cogswell, M.D.,
Dept. of P. H., Helena, Mont.
C. B. Crittenden, M.D.,
State Health Comr., Nashville, Tenn.
Hoyt E. Dearholt, M.D.,
Anti-Tub. Assn., Milwaukee, Wis.
Walter M. Dickie, M.D.,
State Bd. of Health, Sacramento, Cal.
R. L. Dobbins,
Supt. Water Wks., Peterborough, Ont., Can.
W. A. Evans, M.D.,
Tribune Bldg., Chicago, Ill.
John S. Fulton, M.D.,
State Health Officer, Baltimore, Md.
J. N. Furstman,
Board of Education, Peoria, Ill.
Don M. Griswold, M.D.,
State University of Iowa, Iowa City, Ia.
Jas. A. Hayne, M.D.,
State Health Office, Columbia, S. C.
C. R. Hervey, M.D.,
Sanitary Supervisor, Oswego, N. Y.
William F. King, M.D.,
State Health Com'r, Indianapolis, Ind.
William W. MacDonell, M.D.,
City Health Office, Jacksonville, Fla.
A. T. McCormack, M.D.,
State Health Office, Louisville, Ky.
J. J. McGrath, M.D.,
Salem Board of Health, Salem, Mass.
K. E. Miller,
La. State Bd. of Health, New Orleans, La.
Jesus E. Monjaras, M.D.,
Mexico City, Mexico.
Harry B. Neagle, M.D.,
Univ. of Georgia, Augusta, Ga.
Henry R. O'Brien,
Inter. Health Bd., Bangkok, Siam.
F. J. Osborne,
Amer. Society for Control of Cancer, New York, N. Y.
W. S. Rankin, M.D.,
State Health Office, Raleigh, N. C.
B. U. Richards, M.D.,
State Health Officer, Providence, R. I.
I. F. Thompson, M.D.,
Deputy Com'r of Health, Milwaukee, Wis.
B. E. Washburn, M.D.,
Inter. Health Bd., Kingston, Jamaica, B. W. I.
Huntington Williams, M.D., D.P.H.,
State Dept. of Health, Albany, N. Y.

SANITARY ENGINEERING SECTION

Joel I. Connolly,
Treasury Dept., U. S. P. H. S., St. Louis, Mo.
Morris Knowles,
Pittsburg, Pa.
P. F. Longley,
c/o Ministry of Health, Melbourne, Australia.
George W. Simons, Jr.,
Ch. San. Engr., Jacksonville, Fla.
Prof. Earle L. Waterman,
Univ. of Iowa, Iowa City, Ia.

LABORATORY SECTION

CHARLES A. BERTZ, M.D.,
129 W. Humboldt Pkw., Buffalo, N. Y.
N. S. FERRY, M.D.,
2150 Montclair Ave., Detroit, Mich.
MILDRED B. FLOYD,
Dept. of Health, Dayton, Ohio.
LEWIS HENDERSON, M.D.,
847 So. Wood St., Chicago, Ill.
JOHN D. HOWARD,
State Lab. of Hygiene, Concord, N. H.
C. F. MOAT,
State Board of Health, Burlington, Vt.
C. A. SHORE, M.D.,
State Lab. of Hygiene, Raleigh, N. C.
E. R. STITT,
Surg. Gen., U. S. N., Washington, D. C.
WILLIAM H. WELCH, M.D.,
807 St. Paul St., Baltimore, Md.

CHILD HYGIENE SECTION

DOROTHY CHILD, M.D.,
5023 McKean Ave., Philadelphia, Pa.
TALIAFERRO CLARK, M.D.,
U. S. P. H. S., Washington, D. C.
PROF. MARY SWARTZ ROSE,
Teachers College, Col. Univ., New York, N. Y.

FOOD AND DRUGS SECTION

E. S. BISHOP, M.D.,
15 West 73d St., New York, N. Y.
F. C. BLANCK, PH.D.,
U. S. Dept. of Agr., Washington, D. C.

VITAL STATISTICS SECTION

WILMER R. BATT,
State Registrar, Harrisburg, Pa.

BOOKS AND REPORTS REVIEWED

The Laws of Life. Principles of Evolution, Heredity and Eugenics. A popular presentation. *William M. Goldsmith, Boston; Richard G. Badger,* 1922. Price, $4.00 net.

This is confessedly a popular presentation of the facts and theories of modern biology and as such is an excellent antidote for the brand of antiscientific medievalism which has gained so general a hearing and so wide an influence from the Chautauqua platform and in the religious press of the "fundamentalist" movement in certain conservative religious circles. The motive which dominates the book is the relation of biology to the problems of humanity, the service its discoveries can render in the dispelling of superstition, the inculcation of the sense of social responsibility in the face of defects and physical shortcomings of humanity, and the compelling significance of the modern concept of the mechanism of heredity for human progress or decay. As a matter of fact the author is perhaps even too much of a Jeremiah for a well-balanced proponent since dysgenics loom larger than eugenics in his pages. A well-illustrated exposition of the progress accomplished in experimental plant breeding, as, for example, with Indian corn, sweet peas, and with animals, as, for example, with fowls bred both for egg laying and the table, would add point and force to the positive side of human eugenics.

The author ranges over a wide field, from the historical development of scientific ideas down to the recent theories of cross-over in Drosophila. The conventional proofs of the process of organic evolution are set forth and the hypothetical outline of animal evolution is traced in condensed form. The main social value of the book lies in the very readable, well illustrated and simply stated account of the mechanism of heredity and the behavior of hereditary traits in man. The author places feeblemindedness and other dysgenic human qualities in their correct biological setting and skillfully enforces the social lessons derived therefrom. In like manner the misconceptions regarding the so-called inheritance of disease are set aside and prenatal influence and birth marks freed from superstition. The work, though in places uncritical, is admirably adapted for use as a supplementary text for high school classes, for teachers in training in normal schools and teachers' colleges, and as an authoritative work for the general reader desiring a book in which the treatment of heredity and eugenics is in as simplified a form as possible.

✣

Principles and Practice of Infant Feeding. *Julius H. Hess, M.D., Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine.* Third Revised and Enlarged Edition. Philadelphia: F. A. Davis Co., 1922. Pp. 496, with 34 illustrations. Price, $4.00.

Those who have read the earlier editions of Dr. Hess' book on infant feeding will welcome the appearance of the third edition of

this valuable book in its revised and enlarged form. There are few books written for the practitioner which present a subject as clearly and concisely as does this volume. The book comprises nine parts. Part I is a general description of the physiology of digestion and the metabolism of infants. Part II is devoted to maternal nursing, and Part III to artificial feeding. Full details are given for planning the diet of infants who cannot obtain breast milk. Then follows Part IV with a consideration of the various nutritional disturbances of artificially fed babies. It is interesting to note that the classification, nomenclature and pathogenesis of the nutritional disturbances have been revised in this edition to conform to the latest researches. Thus *Overfeeding with Cow's Milk with Insufficient Carbohydrates* replaces the *Disturbed Metabolic Balance. Nutritional Disturbances Characterized by Diarrhea* replaces *Dyspepsia. Athrepsia and Marasmus* replaces *Decomposition. Anhydremic Intoxication* replaces *Intoxication.* Parts V to IX, dealing with rickets, spasmophilia, acidosis, and the anemias of infancy, are entirely new. There is an excellent appendix containing a list of proprietary baby foods, directions for the preparation of infants' foods, and general methods for the hygienic care and management of the baby. This book is well written, compact and deserves careful study.

✤

A School Health Program for Parent-Teacher Associations and Women's Clubs. *Grace T. Hallock.* The Child Health Organization, 36 pages.

Presents very graphically and in a simple manner ways in which the Parent-Teachers Associations and Child Welfare Committees of Women's Clubs can stimulate interest and assist in the establishment of an adequate health program for schools. In connection with the discussion of each new thing to be included in the health program there is given a paragraph showing the child's reaction when the plan of action is followed. The following subjects are taken up with a view of telling not only what can be done but how the women can help in doing it: scales in the school, the school lunch, rest and extra feeding, medical examination and correction of physical defects, the nutrition class, the school nurse, the schoolhouse, recreation, teachers' health, and strategy, publicity and legislation in community health work. The discussion of each subject concludes with a program for a meeting, with suggestions for papers or general discussion. The program always includes a report of local conditions with a list of questions to be covered in such report. A list of useful references is given covering the subjects discussed.

✤

Health Service in City Schools in the United States. *A report of the joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, prepared by Dr. Thomas D. Wood, Chairman, 525 West 120th Street, New York City,* 1922.

Information tabulated from answers to a six-page questionnaire sent to 622 cities of the United States ranging in population from 2,500 up to the largest. Three hundred and forty-one schools answered. The report contains the most up-to-date and reliable information obtainable regarding the present day conduct of representative, significant and practical features of health service in the school systems of the cities and larger towns of this country. The Board of Education is in control of health supervision in 72.7 per cent of the cities reporting; the Board of Education and the Board of Health jointly in 12.6 per cent, and the Board of Health alone in 12.3 per cent. The highest median expenditure per pupil, for health supervision and physical education occurred in cities of under 10,000 and cities between 50,000 and 100,000, with $1.74, while the lowest median of $1.24 was in cities of over 100,000. The average cost varied from $2.34 per pupil in the western states to 96 cents in the southern states.

The criticism is perhaps just that this question, worded as it is to include health supervision and physical education, does not give us a very accurate conception of the expenditures for purely health work. Doubtless in many instances the major portion, if not nearly all, of the per capita expenditure is for physical education alone. The average cost of health supervision and physical education represents about 2.1 per cent of the total sum spent for education. Of the cities reporting 61.0 per cent have health and physical examinations once a year, 17.3 per cent have examinations twice a year, and 4 per cent have none. This information seems somewhat misleading in that it does not include

any statement as to the number or percentage of the pupils included in these examinations. The school physician and school nurse play the major rôles in the conducting of the examinations, sometimes assisted by the teacher, dentist, or physical training teacher. The condition of the eyes, ears, teeth, throat, nose and skin are the points most commonly included in the examination. Nutrition and weight are included in less than 50 per cent of the cities reporting. Health, or hygiene or physiology and hygiene is taught in all grades in 73.1 per cent of the cities reporting.

The picture is perhaps painted a somewhat rosier hue than would be warranted were the facts known as to the extensiveness of the individual courses given. Notwithstanding this possible criticism the advance over the situation in the schools a few years ago is most noteworthy. Health teaching is often correlated with various other subjects, physical training, language, and civics being the most common. Nearly 70 per cent of the cities report daily inspection of children for health habits. Health clubs are organized in 28.7 per cent of the cities reporting. About 50 per cent of the cities report having tried the "Modern Health Crusade" movement. Half of those who have tried it are continuing to use it. Pupils are weighed in 83.4 per cent of the cities reporting; 42.8 per cent report monthly weighing. The weighing is most commonly done by either the school nurse or the regular teacher. Of the cities reporting, 54.0 per cent conduct nutrition classes or clinics for underweight pupils. The school nurse conducts nutrition classes in 24.8 per cent of the cities, while volunteer workers conduct them in 18.6 per cent.

While these figures, taken as a whole, undoubtedly show a great many praiseworthy pieces of health work being undertaken in the majority of the schools of the country, we are nevertheless likely to be too well satisfied with the progress made unless we investigate the situation more closely. For example, in spite of the fact that 61.0 per cent of our cities report yearly physical examinations, what portion of our total school enrollment is included in these examinations? If $1.37 per pupil is spent for health supervision and physical education how much of it is expended for purely health work? Even with 54.0 per cent of our cities conducting nutrition classes how many children in each city are included in these classes and with what degree of efficiency are such classes conducted? Will the answers to these questions tend still further to make us proud of the progress made or will they make us realize that there is still a great deal to be desired?

✤

Modern Microscopy, A Handbook for Beginners and Students. *M. I. Cross and Martin J. Cole. Chicago Medical Book Company, 1922. Fifth Edition, Revised and Rearranged by Herbert F. Angus. With Chapters on Special Subjects by Various Writers.* Cloth. Price, $3.50.

The Microscope, How to Choose It and Use It. *S. E. Dowdy, M.P.S., F.R.M.S. A. E. Soman & Co., St. Andrew's Printing Works, Norwich, England,* 1921.

Both of these books are designed for beginners, and the second particularly for amateurs. The book by Cross and Cole has gone through five editions, which attests its good quality and its usefulness. There is little to criticize in it. As far as it goes, it is excellent. In addition to the authors under whose names the book is published some twelve others have written special articles. It is divided into three parts:

Part One. "The Microscope—Its Construction and Use," in which there are excellent descriptions of glass and its properties, illumination, optical systems, various types of microscopes, the camera lucida, etc. There is a glossary of technical terms, and appendices giving gauges and specifications, and the names of various societies devoted to the study of the microscope.

Part Two. "The Microscope and the Scientist." In this part the weakest chapter is that on public health, which gives evidence of careless expression. For example, we are told that among other organisms, the typhoid, colon and diphtheria bacilli "have all been demonstrated, or cultivated in the upper layers of the soil." Just what the author intends to convey by this statement it is hard to tell, but to the average reader it would mean that these diseases can arise under natural conditions from the upper layers of the soil, which is not true. The chapter on Histology is particularly good, those on Engineering and Agriculture are also worthy of praise.

Part Three. "The Microscope and the Naturalist" is excellent throughout and might well be read by physicians who generally use the microscope only for medicine and public health.

The book is well printed and excellently illustrated, and will make a useful addition to the library of anyone interested in the natural sciences.

"The Microscope," by Dowdy, contains only 53 pages. It is well written and generally well expressed, and from it the amateur can obtain a clear knowledge of the microscope and the scientific principles underlying its construction and use. There is a good chapter on the preparation and mounting of specimens. To those for whom the book is designed, it can be highly recommended.

✤

Handbuch der Fleischbeschau fur Tierarzte, Arzte und Richter, *von Prof. Dr. med. et med. vet. h. c. Robert v. Ostertag. Ed. 7 and 8. Stuttgart: Ferdinand Enke.* 2 vols. Vol. I, x+630 pp., 3 pls., 158 figs. in text, 1922.

The continuous service to sanitation and public health rendered by the veterinarian in the field of meat inspection and in the allied one of milk certification is little known to the general public, and does not often come to the attention of the practitioner. The more successful it is in preventing disease the less public interest is directed to the necessity of its scrupulous maintenance. The classic handbook of Ostertag, now in its eighth edition, had long held the premier position as the veterinarian's guide to all the intricacies of the detection of disease in domestic animals used for food and to the supervision of their products which enter the food markets of the people. The utilization of animal products has reached a high degree of specialization as a result of industrial organization, the advances in chemistry and its offshoots, nutrition and biochemistry. In like manner the growth of scientific knowledge of the signs of the disease and of its many causes has made the adequate inspection of animals slaughtered for food an art of highest order founded on scientific knowledge comparable in standards with that demanded by the medical profession proper. These applications of scientific discovery have transformed the reeking slaughter house of earlier days into a temple of the applied natural sciences. The well conducted abattoir approaches the hospital in order and cleanliness.

This first volume of the two constituting Ostertag's work gives the statistical data indicating the steady increase in the consumption of animal products throughout the world prior to the war and the results of that catastrophe in Central Europe on the food rations of the people. The police regulations governing the slaughtering, inspection, and care of food products in German cities are given in detail and the regulations governing imported viands are also analyzed. The work sets forth the technique of meat inspection, including the detection of falsifications by serological methods, the analysis of the normal state of the various organs and parts exposed for sale, the classification by kind, age, and sex, and the physiological conditions which mar the odor or appearance of meats. One important chapter deals with the pathological conditions of animals, ranging from structural abnormalities, through the long categories of atrophy, hypertrophy, pigmentation, calcification, metaplasia, degenerative phenomena, hemorrhagy, necrosis, various types of lesions, tumors, cancers, and parasites. The volume closes with an analysis of the diagnostic evidences of diseases in the various organs and organ systems of the bodies of domestic animals subject to inspection. One notes the high degrees of perfection of our knowledge of disease in our mammalian food supply and the utter inadequacy of any scientific basis for a like control over our fish food supply both aquatic and marine. The work is well organized, very complete and well illustrated.

✤

Carriers in Infectious Diseases. *Henry J. Nichols, M.D., M.A., Major Medical Corps, U. S. Army. Baltimore: Williams & Wilkins Company,* 1922. Pp. 184. Price, $3.00.

The health officer is confronted by no more puzzling problem than the handling of disease carriers, and any attempt to shed light on the subject is welcome. Major Nichols has done a real service in preparing this manual, which is thoughtful, scientific, well presented and reflects an unusually large experience. It must be pointed out, however, that this experience has been obtained almost entirely under conditions seldom met with in civil life, with facilities for control never enjoyed by the civil officer. The principles involved are of course identical.

The author devotes some space to terminology, and proposes "phorology" to denote the subject, "phore" or "phorist," for the carrier, and "phorologist," for the student of

the subject. Medicine is already overloaded with terms, and since, in these days, Greek and Latin are "dead" languages in fact as in name for the vast majority of students, we make a plea for the retention of the English designation "carriers," amply and well defined as "an individual who harbors and transmits pathogenic parasites without showing the usual evidences of infection."

An important fact, too little realized, is that the "chronic carrier state is really an infection sharply localized," an infection liable to recrudescence. We strongly endorse the statement that "the discharge of a patient without release cultures and appropriate action is as unprofessional as treatment without diagnosis," yet such a program is Utopian. Even in diphtheria, perhaps the most easily carried out examination, and the one for which there is most abundant provision, release cultures are often not made. Indeed, diagnostic cultures are often not made even by graduates of our best colleges. Here is a fertile field for professional education by officers of health.

The real disappointment in the book is in the matter of treatment. This is partly due to the nature of the cases under consideration, and partly to a lack of fullness in discussion. Removal of the focus of infection by surgical means, when this can be determined, is lauded as the most successful local method of treatment, said to be successful in more than 50 per cent of typhoid carriers and more than 80 per cent of diphtheria carriers. Admitting these figures to be correct, a large percentage of uncured carriers remains for the unhappy health officer to deal with. For diphtheria carriers, the treatment by staphylococcus overriding is dismissed by the author without discussion, with the statement that it is dangerous. A fairly extensive experience of nearly ten years with this method enables the writer to say that no serious infection has been observed, an inflamed throat having been the worst result, surely nothing to hold one back when the object in view is considered. In almost all diseases certain persons will remain carriers, in spite of all treatment, for indefinite periods, and it is for the cure of these cases that persistent search for a method of cure is needed.

The book closes with a chapter on Carriers in Veterinary Medicine, by Captain R. A. Kelser, of the Veterinary Corps of the U. S. Army, in which the subject is presented in an excellent manner. There is a growing recognition of the importance of animal diseases in their relation to man, well shown in this chapter. Space admits of reference only to some of the most important infections conveyed to man from animals, such as tuberculosis, Malta fever, foot and mouth disease, some of the paratyphoid group, tetanus, anthrax, glanders and intestinal worms. Careful reading of this section will amply repay the student.

In all respects the book is one that can be unreservedly recommended to physicians and health officials. It is printed on unglazed paper, in clear type of good size, so that reading is pleasant.

✤

Biology in America. *R. T. Young. Boston: Richard G. Badger.* 509 pp., with illustrations. Price, $7.50.

The author traces the work of the pioneer biologists and the growth of museums, biological stations, zoological and botanical gardens, and of institutions for biological and medical research in the United States down to the present time. He also outlines the growth of the various branches of biological knowledge and notes the contributions which some American investigators have made in these various fields. Especial attention is given to the study of heredity and the basis thus laid for our growing knowledge of human inheritance and eugenics. In the chapter on Biology and Medicine the world's progress in preventive medicine due to the discoveries of Pasteur and Lister and to the work of Ehrlich and Wassermann is set forth in some detail. Flexner's contributions to our knowledge of spinal meningitis are recorded but Todd and Wolbach's work on typhus is not noticed. Quite naturally malaria and hookworm come in for elaboration since they play so large a part jointly in the fields of biology and of medicine. The crowning event in experimental medicine in America is, however, the solution of the problem of yellow fever. Following the suggestions of Nott, Beauperthuy, and Finlay, made in earlier years, Carroll, Lazear, and Reed in 1900 demonstrated that Stegomiyia transmitted yellow fever to man and Gorgas was later able to make possible the building of the Panama Canal by restricting the outbreaks of that dread plague. The relation of the rat to the plague affords another striking illustration of the progress of medical biology. Some attention is given to the unsolved problem of

cancer and to the institutions founded to attack this perplexing biological problem. The varied work of the United States Public Health Service in safeguarding the nation's health, by quarantine, control of epidemics, by inspection, and by research in parasitology and epidemiology receives high praise. The necessity and high value of animal experimentation in health control, in the detection and cure of disease, and in the research for the causes of disease are vigorously defended. This chapter will make excellent supplemental reading for all students in elementary hygiene and sanitation in schools and colleges.

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PUBLIC HEALTH LABORATORY NOTES

C. C. YOUNG

The Isolation and Preservation of Tubercle Bacilli by Means of Glycerine.—Author claims glycerine to be useful in isolating acid-fast bacilli. Tubercle bacilli in tissues preserved in pure glycerine in cold storage will keep alive for months and possibly years. The method for isolating tubercle bacilli from sputum is as follows: A large platinum loopful of sputum or other material from which acid-fast bacilli are to be isolated, is inoculated into tubes containing 1 c.c. of pure glycerine, 75 per cent, 50 per cent, and 25 per cent glycerine in normal saline. After remaining for 24 hours at room temperature, cultures are made on Dorset's 4 per cent glycerine egg medium or Petroff's medium. If contaminations are numerous on all the tubes further cultures are made on the third day. Sometimes all contaminating bacteria are destroyed after 24 hours in glycerine. Mixed Cultures if left sufficiently long in glycerine, have uniformly given pure cultures of the tubercle bacilli. Author claims to have worked, however, with cultures containing numerous tubercle bacilli. It remains for further experiments to show whether this procedure will isolate them when very scarce and when contained in very highly contaminated material such as milk or stools.—C. C. Twort, M.D., London, *The Lancet*, 2, 1221, 1922.

✚

An Effective Method of Counting Hookworm Eggs in Feces. —Author finds on investigation that methods previously used in counting eggs in feces are inaccurate, so devises a simple accurate method. Three grams of feces are diluted with N/10 NaOH to 45 c.c. and 10 small glass beads are added. After shaking, 0.15 c.c. is immediately placed on (2 by 3) slide and covered with 20 by 44 mm. coverslip. One hundred times number of eggs counted gives number of eggs per gram of feces. By use of two specimens from same sample, author succeeds in obtaining same count, proving that method is accurate.—Norman R. Stoll, M.S., *Amer. Jour. of Hygiene*, 3, 59, 1923.

✚

A Micromanipulator for the Isolation of Bacteria and the Dissections of Cells.—The author describes an apparatus for manipulating micro needles and micro pipettes under the highest microscopic magnifications. This apparatus is an improvement on Barber's pipette holder, as it is of simpler construction and greater accuracy can be used in controlling its movements. In isolating bacteria a small amount of liquid culture of bacteria is sucked into a fine pipette which is then placed in the manipulator. The tip is raised by the manipulator until it reaches the under surface of the coverslip of a moist chamber. A series of hanging droplets are now placed on the coverslip. The droplets are now examined and those containing a single organism are drawn up into a fresh sterile pipette and the contents blown into a tube of suitable medium. It is possible by this method to obtain cultures known to originate from a single cell. Robert Chambers, *Jour. of Bact.*, 8, 1, 1923.

✚

Device for Tubing Cooked Meat Medium. The author recommends the use of an automobile grease gun for tubing cooked meat medium. The method is clean and rapid. The barrel is filled with meat the same as it is filled with grease. The nozzle, however, must

not be of too small diameter and must reach past the middle of the tube. The fluid part is added later through an ordinary tubing funnel. Ground meat is bought, an equal volume of water is added, sterilize, neutralize, and after standing over night skim the fat off the top, sterilize at 120° C. for one-half hour. This meat medium will keep anaerobic for days and does not have to be covered with paraffin oil. It is important that the material inoculated be thoroughly mixed with the meat. W. L. Holman, *Jour. of Bact.*, 8, 47, 1923. P. C. Y.

✤

The Autolysate-Precipitin Reaction in Typhoid Fever. (A Preliminary Report.)—The authors consider cultural methods unsatisfactory in diagnosis and release of typhoid fever. They determine presence of an autolysate of the typhoid bacilli in the excretions. Three methods used in producing the sera for the autolysate-precipitin reaction are given. The stool is prepared for the test by incubating 2 gms. in 20 c.c. saline for 12 hours. The supernatant fluid is centrifuged and then filtered through Kieselguhr and filter paper. In the case of urine, albumin must be eliminated. 1.0 c.c. of the filtrate to be tested is agitated with 1.0 c.c. of typhoid serum, allowed to stand at room temperature one hour, placed in ice box over night and placed at room temperature again for several hours. Test is controlled by 1 c.c. of normal filtrate plus 1 c.c. of serum and 2 c.c. of test filtrate treated in same way. Authors report 100 per cent. positive precipitin reactions against 6 per cent positive bacteriologic diagnosis. Their table of cases covers 145 specimens from 9 cases, 5 convalescents, 2 carriers. Negative results were obtained from specimens from 152 normal persons. John L. Laird, M.D., John R. Conover, M.D., and Donald C. A. Butts, Philadelphia, *Am. Jour. of Med. Sciences*, 165, 241, 1923.

✤

Brom Cresol Green, A Sulfonphthalein Substitute for Methyl Red.—The author suggests a sulfonphthalein substitute for methyl red. Methyl red is not absolutely reliable as it is easily reduced irreversibly to a colorless compound. The suggested compound is tetra brom M-cresol sulfonphthalein and seems to be as stable as the other sulfonphthaleins. It covers practically the same range as methyl red, its effective range as an acid-base indicator being between Ph 4.0 and 6.0. Its apparent dissociation constant in terms of Ph is 5.00 (that of methyl red is 4.95). Brom cresol green (the suggested common name) may be used directly in a bacteriological culture medium. Barnett Cohen, Washington, D. C., *Proc. Soc. Exp. Biol. and Med.*, 20, 124.

✤

Wassermann and Flocculation Tests Compared in 1000 Cases.—Author's procedure consists of essentially a combination of the flocculation reaction of Sachs and Georgi and the Sigma Reaction of Dryer and Ward. The antigen was prepared according to Dryer and Ward; the cholesterinization and titration of antigen was carried out according to Sachs and Georgi. According to author, the flocculation test gives as reliable results as the Wassermann reaction. Only 2 per cent of sera did not check with the older test. Contamination or hemolysis in the sera may give rise to false positive readings in the flocculation test and should not be used in this procedure. The presence of bile pigment or an anticomplementary state of the sera does not interfere with the flocculation test. A. L. Urquhart, M.B., London, *The Lancet*, 1, 125, 1923.

✤

The Bacteriology Ozaena.—Among the seven different kinds of bacteria obtained from the nasal passages of ozaena patients, the most numerous were gram negative bacilli. Among these a coccobacillus resembling that described by Perez was found only in ozaena patients. By experimental infection of the nasal passages of rabbits, author was able to produce symptoms closely agreeing with those of human ozaena. In immune tests with this coccobacillus, the serum of ozaena patients generally showed a weak reaction; with convalescent patients, however, the specific reactions were remarkably strong. Author believes from experiments relating to animal infection and immune reactions that the coccobacillus isolated by him may confidently be considered to be the causative agent of ozaena. The reason, furthermore, that the reactions of the serum of most patients are rather weak is explained by the nature of the disease, which causes merely local changes so that in the general circulation the antibodies appear only in small quantities. Dr. Kozo Sakagami, Tokyo, Japan, *The Lancet*, 2, 19, 1923.

Serological Classification of the Staphylococci.— The latest important work on classification of staphylococci is the work of Winslow, Rothberg and Parsons. These workers, however, classify these cocci by a combination of chromogenic, cultural and biochemical characters, without touching upon their pathogenic features and without employing serological or immunological procedures. Author worked with ninety strains of staphylococci obtained from different cases at St. Bartholomew's Hospital, employing both agglutination and absorption tests. According to this worker there are two main groups of straphylococci: Group I being pyogenic and almost always forming acid with mannite, while Group II resembles the so-called S. epidermis albus, usually failing to make acid in mannite broth and generally forming white colonies. The first group contains, at least, three serological types, of which type I is the most common, in author's series. The second group contains two serological types and is more irregular in its biochemical and chromogenic qualities than the first or pyogenic group. Author insists that agglutination tests of the staphylococci, while affording some indication of serological types, are insufficient without absorption of agglutinin tests to determine the serological position of many individuals. T. G. M. Hine, M.D., London, *The Lancet*, 2, 1380, 1922.

✚

A Fatal Case of Bacillus Acidi Lactici Meningitis.—A case of bacillus acidi lactici meningitis is reported with isolation of the organism from the blood and spinal fluid before death and from viscera and brain after death. The patient presented all the classical signs of meningitis and the pathogenicity of the organism was demonstrated by its virulence for rabbits and guinea pigs. Henry M. Ray, *Jour. Lab. and Clin. Med.*, 8, 260, 1923.

✚

Typhoid Abscess of the Spleen.—Paschkis reports a case of subphrenic abscess originating in the spleen in a patient who had suffered from polyarthritis. Typhoid bacilli were found in the abscess. He discusses the possibilities of typhoid arthritis and the pyogenic action of typhoid bacilli. Medizinsche Klinik, Berlin, November 26, 1922. *J. A. M. A.*, **80**, 217, 1923.

The Determination of Iodine in Large Samples of Foodstuffs.—The method of Kendall was found satisfactory for estimating small amounts of iodine as low as 0.02 mg. where destruction of large amounts of organic matter was not involved. If, however, the size of the sample is increased there is a corresponding decrease in accuracy. In order to reduce the bulk of material the following processes were carried out: Cereal grains were made into beer without removal of any solid matter and the alcohol volatilized after making the beer alkaline. In the combustion the fumes were passed through an alkaline solution to catch the iodine. After the iodine was in the form of I_2 it was shaken out with carbon tetrachloride and then this carbon tetrachloride shaken with a dilute solution of SO_2 to get the iodine into water solution again as iodine. By these processes both organic and inorganic inert constituents may be eliminated. J. F. McClendon and O. S. Rask, Minneapolis, Minnesota, *Proc. Soc. Exp. Biol. & Med.*, 20, 101, 1922.

✚

A Modified Gram Stain.—Procedure: (1) Flood slide with dye solution (30 drops of a 1 per cent aqueous solution of methyl violet 6B [Coleman and Bell] with 8 drops of a 5 per cent sodium bicarbonate). (2) Flush off stain with iodine solution (2 gm. iodine dissolved in 10 c.c. N/1 NaOH to which is added 90 c.c. of water). (3) Allow slide to dry in air after draining off excess iodine solution. (4) Decolorize with acetone (100 per cent) and dry in air. (5) Counterstain for 10-30 seconds with .01 per cent aqueous solution of basic fuchsin. (6) Wash and dry. Clear in Xylol if necessary. This method has yielded particularly good results in staining milk slides for Bacillus Acidophilus and in staining fecal specimens. By this method gonococci and diphtheria bacilli are particularly well differentiated and more easily identified than by older methods. The same was found to be true for a number of common pathogens and saprophytes studied. Nicholas Kopeloff and Philip Beerman, New York City, *Proc. Soc. Exp. Biol. & Med.*, 20, 71, 1922.

✚

Influenza-Like Bacilli.—It has been definitely shown that true influenza bacilli require two accessory food substances, one of which

resists autoclaving at 15 pounds for 30 minutes, while the other does not. Both substances are present in blood. They have been found elsewhere; the autoclave-stable factor in unfertilized eggs and in potatoes, and autoclave-labile are in yeast extract, potatoes, tomatoes, beans and carrots. The author describes two influenza-like bacilli which require only an autoclave-labile substance as an accessory food factor, and recommends that the accessory food factor requirements be used as a means of identifying true influenza bacilli. T. M. Rivers, *Johns Hopkins Hosp. Bull.*, 33, 429, 1922.

✤

Residue Antigens for Specific Precipitation and Complement Fixation Reactions.—In "Further Studies on Bacterial Hypersusceptibility" Dr. Hans Zinsser and Miss Julia T. Parker used heat- and acid-resistant antigenic materials and found these substances very stable. The authors recommend these antigens for routine purposes in laboratory investigations. Technique: (*Jour. Exp. Med.*, 33, 278, 1923) Hormone agar, blood agar and chocolate agar plates were inoculated from agar slants, bacteria grown and collected into salt solution, and centrifugalized down. They were then washed, dried over sulphuric acid, and ground with marbles for from 2 to 3 weeks. With tubercle bacilli, staphylococci, and typhoid bacilli grinding was absolutely necessary. With influenza bacilli and pneumococci, grinding was unnecessary. The ground bacteria were placed into shaking bottles in varying quantities of salt solution, alkalinized to a point of about 9–9.4 and shaken for 4 hours. The preparation was filtered, acidified and boiled at acid reaction for 3–5 minutes. The filtration was cooled and neutralized to pH 7 and again filtered. This final water-clear material is the residue used for antigens. Large glass Pyrex pie plates with tin covers were substituted for Petri dishes in order to obtain large masses of bacteria.

✤

A Selective Culture Medium for the Diphtheria Bacillus.—To 75 c.c. of clear pig, sheep or human serum is added 1 c.c. of a 50 per cent sodium citrate solution and sufficient dextrose-veal-infusion-broth to bring the volume to 100 c.c. With a 3 per cent citric acid solution the reaction is then adjusted to pH 6.4 by the colorimetric method, as described in recent editions of books on bacteriological technic. It has been found that certain indicators, as for instance bromcresol-purple, give a qualitative error in the presence of a large amount of protein; that is, colors may be seen which cannot be properly matched with the standards. Di-bromthymol-blue is an indicator which covers the range required, gives fairly good colors and is not subject to this qualitative error. The 3 per cent citric acid solution is diluted 1:10 for the preliminary colorimetric titration, but is used undiluted when added for adjustment of the reaction. If the medium is made more acid than pH 6.4, it does not coagulate firmly and the surface may break when it is streaked with a platinum loop or throat swab. It is desirable, however, to have the reaction as acid as possible without interfering with the coagulability of the medium, so that the maximum inhibitory effect upon other throat organisms may be obtained; the optimum seems to be pH 6.4. After the reaction has been adjusted with citric acid, the medium is delivered into culture tubes, coagulated in a Koch inspissator and sterilized by the fractional method on three successive days. In many laboratories Loeffler's serum is made with beef extract broth instead of meat infusion broth; this is much cheaper and probably does not appreciably impair the quality of the medium; it can be used for this medium also. The preparation of the medium may be simplified further by inspissating for one period of four hours instead of by the fractional method. The reaction of the serum medium herein described is adjusted to pH 6.4 by means of citric acid. The citric acid plays a dual rôle in that (1) it has a differential effect, inhibiting many of the common throat organisms which cannot grow at this pH; and (2) it has a growth-accelerating effect on the diphtheria bacillus to which it apparently serves as a source of carbon. Tests made with this medium show it to be definitely superior to Loeffler's serum for the cultivation and isolation of the diphtheria bacillus. E. A. Greenspon, *Johns Hopkins Hosp. Bull.*, 34, 30, 1923.

✤

Observations of the Production of Toxic Substances by Pneumococci.—Filtrates from cultures of two virulent strains of Type I pneumococci were injected intraperitoneally into mice. Media containing defibrinated

human blood were used so that conditions existing in human body could be more closely approximated. In no instance was any toxic effects observed in the mice. The conclusions are that the toxic phenomena of pneumonia are not due to any soluble toxin produced by the pneumococci. Alan M. Chesney, M.D., and Alfred B. Hodges, M.D., *Johns Hopkins Hosp. Bull.*, 33, 425, 1922.

✦

The Combination of the Sachs-Georgi and Wassermann Reaction.—The flocculent ppt. of a Sachs-Georgi reaction gives a positive Wassermann reaction, while the supernatant fluid does not. Suitable suspensions of $BaSO_4$ and $Cu(OH)_2$ in physiological saline solution also inhibit hemolysis, while the filtrates do not. The positive Wassermann reaction in the first instance may be due to physical absorption of complement, and need not mean a specific positive reaction. S. Rothman, *Deut. med. Wochschr.*, 47, 952 (1921); *Chem. Abstr.*, 17, 137, 1923.

✦

Diastase in Blood and Urine as a Measure of Renal Efficiency.— The concentration of urinary diastase has been widely used as a test of both pancreatic and renal efficiency. Comparatively few investigators, however, have estimated the blood diastase and even fewer have determined simultaneously the values for blood and urine. Wohlgemuth's method was employed in estimating diastase in the urine and a "drop" modification of this method was used in the blood determinations. Author's claim that simultaneous estimations of diastase in blood and urine throws light on the excretory powers of the kidneys and that it is necessary to demonstrate retention of diastase in the blood before concluding that disease of the kidneys is responsible for a diminished excretion of the ferment. G. A. Harrison, M.B., and R. D. Lawrence, M.D., London, *The Lancet*, 1, 169, 1923.

NOTICE

Each month we desire to publish in the *Laboratory Notes* 2 or 3 short articles (not exceeding 250 words) dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the 15th of each month. C. C. YOUNG.

The Biological Property of the Flocculent Precipitate Produced in the Serologic Demonstration of Lues.— The flocculent ppt. of a Sachs-Georgi reaction contains most of the anticomplementary substance as tested by a suitable hemolytic mixt. The fluid contains some of it also. The anticomplementary property is lost on heating to 100°. H. Sachs and H. Sahlmann, *Deut. med. Wochschr.*, 47, 1083 (1921); *Chem. Abstr.*, 17, 137, 1923.

✦

On the Identity of the Toxins Produced by Serologically Different Strains of Bacillus Diphtheriae.—Author takes up the findings of Havens, who classified diphtheriæ bacilli into two agglutinating groups and claimed that whereas the toxins produced by members of group 1 were neutralized by antitoxin in common use (which is usually made from strain Park Williams No. 8 belonging to group 1), the toxins produced by the members of group 2 required very large amounts of antitoxin for their neutralization. Author worked with 130 strains of B. diphtheriæ isolated from swabs obtained during a recent epidemic in London. These strains were classified into three different agglutinating strains by A. S. G. Bell. An agglutinating serum prepared from strain Park Williams No. 8 agglutinated 17 of the strains. A second serum made from a strain not agglutinated by the type 1 serum agglutinated 8 strains, while a third serum made from a strain which was not agglutinated by either type 1 or type 2 serums agglutinated 80 strains. Twenty-five strains were not agglutinated by either of the three sera prepared. The results are in agreement to those obtained by other laboratory workers as well as clinicians, namely, that the monovalent diphtheriæ antitoxin obtained with Park Williams strain No. 8 is efficacious in neutralizing diphtheria toxin produced by different strains of these organisms. Percival Hartley, M.C., London, *The Lancet*, 1, 17, 1923.

✦

The Chemical Composition of the Flocculent Precipitate of the Sachs-Georgi Reaction for the Demonstration of Syphilis.— By far the greater part of the Sachs-Georgi ppt. is formed by lipoids. It contains only small amounts of protein and they are in the form of globulin. M. Klostermann and W. Weisbach, *Deut. med. Wochschr.*, 47, 1092 (1921); *Chem. Abstr.*, 17, 137, 1923.

PUBLIC HEALTH ADMINISTRATION

ALLEN W. FREEMAN, M.D.

The International **Exposition at Strasbourg.**—The first of June, 1923, will mark the beginning of the celebration of the Centenary of Pasteur at Strasbourg. The celebration will embrace three aspects: (1) The opening of the exercises by the unveiling of a monument to Pasteur, (2) The creation of a Museum of Hygiene destined to perpetuate the memory of Pasteur and his discoveries, (3) The opening of an International Exposition showing the results of the work of Pasteur in the fields of medicine, hygiene, industry and agriculture.

The inaugural exercises on June 1 will be attended by the President of the French Republic, Government officials, and numerous delegations of scholars and scientists from all countries. The Exposition will include among other exhibit groups the following of especial interest to public-health workers: Bacteriology, chemicals and the chemical industry, social hygiene, child welfare, military hygiene, vital statistics, public-health administration, municipal hygiene, the food industries, refrigeration, etc.

Congresses will be held in connection with the Exposition relating to most of these subjects which have just been referred to. Of general interest will be the athletic events to be conducted in a special stadium fitted up by the City of Strasbourg. Individuals in charge of the celebration include leaders among the French savants headed by Professor Borrel, Director of the Institute of Hygiene and Bacteriology of Strasbourg, from whom detailed information relative to the Centenary can be obtained. The eyes of the American public-health profession will be turned towards Strasbourg next June to do homage to that towering figure in the history of public health, Louis Pasteur.

✤

Eye Sight Conservation Council.—Election of Secretary James J. Davis of the U. S. Department of Labor and of Prof. F. C. Caldwell of the Department of Electrical Engineering, Ohio State University, as directors of the Eye Sight Conservation Council of America is announced by L. W. Wallace, president of the Council, the annual meeting of which was held in New York City, February 6.

Secretary Davis and Professor Caldwell will act with leading engineers, educators, state and federal officials, economists and civic leaders in carrying on a nationwide plan to conserve vision in industry and education. The movement is being directed from New York by Guy A. Henry, General Director of the Council. Disclosures made by the Hoover Committee on the Elimination of Waste in Industry showed that poor eyesight among the workers was causing heavy annual economic losses.

To remedy this situation is a national duty. Secretary Davis declares in a statement just made public by the Council, "I am informed," he adds, "that of the 40,000,000 or more men and women who are gainfully employed in the United States, upwards of 25,000,000 suffer from some form of defective vision. I myself know something of the evils which come in the train of watching molten metal through the peephole of a puddling furnace."

✤

How nimbly and trustfully we go from one fad to another, seeking always the short and easy cut to cure and restore health. From Fletcherism to Tanlac; from the "Key to the Calories" to Fleischmann's Yeast; from vitamines to monkey glands; from Coué to Abrams. Every day, in every way—Next!—*Bulletin Indiana State Board of Health.*

✤

The deputy health officer of a certain village in responding to a letter of inquiry from the State Registrar as to why no birth or death report had been received from his jurisdiction, said: "We have not had a death in eleven months and we have not had a birth in the past year. Our people are too old to breed and too contrary to die."—*Bulletin Indiana State Board of Health.*

VITAL STATISTICS

LOUIS I. DUBLIN, Ph.D.

Tuberculosis Mortality in New York City, 1922.—Tuberculosis in all its various forms claimed 5,794 victims in New York City during 1922, giving the rate of 99 to 100,000 inhabitants. It is the first time in the history of New York City that a tuberculosis death rate below 100 has been reached. Last year's rate was 103. In 1910 tuberculosis caused 13 per cent of all the deaths occurring in New York City. In 1922 the percentage was reduced to 8.

Excluding Richmond, which contains a number of institutions, including the municipal tuberculosis hospital of Sea View, Manhattan Borough had the highest death rate in 1922—105 per 100,000 population. The lowest mortality occurred in the Bronx, 71 per 100,000. The Borough of Queens had a rate of 74, against 69 in 1921. Several explanations have been suggested for the increase. At present there are registered with the Department of Health nearly 28,000 cases of tuberculosis in New York City. This represents a morbidity from pulmonary tuberculosis of 472 per 100,000 inhabitants, of which more than one-half of the cases registered are from the Borough of Manhattan.—*Bulletin of the New York Tuberculosis Association*, 4:3-7, Jan.-Feb., 1923.

✣

Newark's Mortality for 1922.—The death rate in 1922 in Newark was 12.1 per thousand, which was .9 higher than 1921. The city mortality for the second half of the year was unusually low and resulted in a much better rate than was anticipated from the progress of the first six months. The increase in the city mortality was largely due to the excess deaths from respiratory infections, principally influenza, measles and pneumonia. The diphtheria rate, 16.9 per 100,000, was higher than for any year since 1918. Prominent in the increased fatality is that from organic heart disease, for which there were 640 deaths recorded under this head, an increase of 130 more than for 1921. The tuberculosis rate, 99.1 per 100,000, was the lowest ever recorded for Newark, and was 5.8 points lower than that for 1921. There were fewer puerperal deaths. The infant mortality rate, 74.8, was an increase of 3.3 points above the rate for 1921. The birth rate, 25.4 per 1,000, was 2.1 less than that of the previous year.—*Monthly Bulletin of the Department of Health*, Newark, New Jersey, Jan., 1923.

✣

Accidents in Toledo in 1922.—Sixty-five per cent of the 1,157 traffic accidents since last August, when traffic bureau records were started, occurred at street intersections.—*Toledo City Journal*, Jan. 27, 1923.

✣

Infant Welfare in Chicago, 1922.—Approximately 12,000 babies were taken care of by the 27 infant welfare stations of Chicago during 1922. While the death rate among infants for the city was 89 per 1,000, the rate among welfare babies was only 14. Vital statistics recently announced give Chicago's birth rate as 20.2, as compared with 20.33 in 1921, and the death rate, 11.88, as compared with 11.08 in 1921.—*J. A. M. A.*, 80:188, Jan. 20, 1923.

✣

Vital Statistics for France, 1922.—The vital statistics for France during the first six months of 1922, as compared with the statistics for the corresponding period of 1921, are as follows:

	1922	1921
Living births	326,725	421,180
Deaths	387,681	348,329
Excess of births over deaths	9,045	72,851

During the same period the number of marriages decreased by nearly 45,000.—*J. A. M. A.*, 80.123, Jan. 13, 1923.

✣

London Birth Rate.—In the nine months following the census of 1921 there was a fall in the birth rate of 9.4 per cent from the same period of 1911, although the proportion of married women under 45 years of age in the population should have given an increase of 1.7 per cent. The decline in infant mortality, however, reduced the fall in the effective birth rate. Legitimate fer-

tility showed a decline of 12.8 per cent, or when standardized for variation in the ages of the married women under 45, of 11.7 per cent. (Changes in the Birth Rates in Legitimate Fertility in London Boroughs, 1911 and 1921. T. T. S. de Jastrzebski.)—*J. A. M. A.*, 80:195-6, Jan. 20, 1923.

✤

Morbidity in Connecticut.—Certain diseases—notably measles, whooping cough, influenza and pneumonia—at the present time are more widespread in the State than the average year. The total of 2,061 cases of measles reported in January is practically five times as many as were reported in Connecticut during the same month for 1922. Measles is epidemic in Hartford, New Haven, and Fairfield counties. The character of the disease in 1922 and this year is apparently more fatal, or parents are neglecting to call physicians early, for a larger percentage of the cases are dying than during the corresponding period in 1921.

Scarlet fever, pulmonary tuberculosis, and typhoid fever are lower than or prevailing at about the average for these diseases during the past few years.

Whooping cough is being reported in larger numbers than a year ago, but a smaller percentage of the whooping cough cases at the present time are fatal than for many years back.—*Conn. Weekly Morbidity Report*, Feb. 3, 1923.

✤

Pulmonary Tuberculosis Among Negroes.—The results at the Piedmont Sanatorium for the period April, 1918-December 30, 1921, prove that the negro, although he shows less resistance against the disease than the white man, will respond to treatment for pulmonary tuberculosis, and that if treatment is begun in the early stages of the disease the large percentage of them will continue well.

Syphilis complicating tuberculosis renders the prognosis more grave than simple tuberculous infection.

If the "young adult type" of tuberculosis is indicative of lessened resistance on account of absence of contact, then the records will go to show that the high death rate from pulmonary tuberculosis among negroes is due to absence of contact rather than insanitary surroundings.

The mulattoes have a better resistance against pulmonary tuberculosis than the pure-bred.—Further Observations on Pulmonary Tuberculosis Among Negroes (H. G. Carter), *Am. Rev. Tuberc.*, 6:1002-1007, Jan., 1923.

✤

Pellagra in Massachusetts.—The data upon which this paper is based have been obtained from the records of the Massachusetts State Department of Health from 1913 to 1921, inclusive, and from sixteen institutions in Massachusetts. The data from the institutions cover the period from 1905 to 1922, inclusive. The results are as follows:

The number of cases of pellagra found in State and hospital records shows that pellagra is by no means rare in Massachusetts. Pellagra has been reported from nearly all the counties of the State. Most of the cases originated within the State. Pellagra is most common where population is densest. Many of the patients were residents of Boston or vicinity. In Massachusetts women have been affected in much larger proportion than have men. Pellagra is by no means confined to institutions for the insane.—(George Cheever Shattuck), *Boston M. & Surg. J.*, 188:110-115, Jan. 25, 1923.

✤

Death Rate from Certain Causes in 43 Cities of the United States, 1922.—A summary for 43 cities in the *Weekly Health Index*, which reported each week during the year 1922, shows a typhoid fever rate of 3.1 per 100,000 population, as against a rate of 3.6 in 1921. The highest 1922 rate is 16.7, for Nashville, and the lowest 0, for New Bedford and Providence, in which places no deaths occurred from typhoid fever. From tuberculosis (all forms) the 1922 rate was 99.7, against 104.5 in 1921. The 1922 rate from pneumonia (all forms) was 137.8, as compared with 106.7 in 1921. From violence the 1922 rate was 88.8, against 92.4 in 1921.—Department of Commerce *Weekly Health Index*, Jan. 13, 1922.

✤

City Planning in Grand Haven.—Chamber of Commerce prepares extensive educational campaign to insure adoption of city plan.—Fred. McCrea, *American City*, 28:2, 173, Feb., 1923.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

The Bactericidal Action of Ultra-Violet Light.—Paper describes methods by which exact determinations may be made of the wave-lengths of light which kill bacteria, and the following conclusions are drawn: (1) The bactericidal action of light is confined to the ultra-violet region of the spectrum, beginning at 350 $\mu\mu$, and extending with increasing intensity to the shortest wave-lengths measurable with a quartz spectograph, 185.6 $\mu\mu$. (2) These limits coincide with the absorption of ultra-violet light by bacteria. (3) The temperature coefficient for the bactericidal action of light was found to be 1.05 over a range of 10° C., and the constant μ in the formula of Arrhenius was 934 to 975. (4) An increase in hydrogen-ion concentration of the fluid in which bacteria are suspended during their exposure to ultra-violet light increased the velocity of the bactericidal action. The accelerating effect began at Ph 4.6, the isoelectric point, and was very strong in fluids more acid than this. (5) Neither temperature nor the hydrogen-ion concentration rendered bacteria sensitive to the longer wave-lengths of light.—S. Bayne-Jones, M.D., and J. S. Van der Lingen, Ph.D., *Johns Hopkins Hospital Bulletin*, 34:383, 1, January, 1923.

✦

Research on the Bacterial Purification of Sewage by Activated Sludge.—(1) The activated sludge process gives irregular results in bacterial purification. The maximum percentage removal of bacteria, in the laboratory tests, was about 50; (2) real bacterial purification is accomplished by prolonging aeration well beyond two weeks; (3) the reduction of B. coli is also variable; (4) prolonged aeration without activated sludge produces a much greater reduction of B. coli, about 95 per cent; (5) at the end of chemical purification (always reached at six hours in these experiments) the pathogenic organisms of typhoid-paratyphoid group almost always remain in the effluent. Their disappearance seems to be little influenced by aeration or presence of activated sludge; (6) under the same conditions, cholera vibrio are not recovered after about six hours; (7) the destruction of typhoid and paratyphoid types in a sewage medium seems to have, as an essential factor, the "vital concurrence" of other forms of saprophytic life; (8) the typhoid-paratyphoid group disappears in two to three days in aerated or non-aerated sewage, but in the same sewage *sterilized* they survive much longer.—Paul Courmont and A. Rochaix, *Revue d'Hygiene*, Vol. 44, No. 10, October, 1922.

✦

Garbage Collection and Disposal in Florence, Italy.—Office of public cleaning and similar services is responsible for street cleaning and garbage removal. Men with baskets carry house refuse from interior of premises to horse-drawn metal vans. About 44,000 tons are collected yearly. Disposal plant at Rivoli is Beccari System of Zymothermic Cells. Each cell is charged through trapdoor at top; liquid drains through perforated concrete floor to sewer. Temperature of fermenting garbage is 140° to 170° F., developing nitrifying bacteria and destroying denitrifying and pathogenic bacteria. Gases are passed over material which convert it into sulphate of ammonia. After 20 or 30 days' final product, earthy humus is removed.—*American City*, 28:2, 119, Feb., 1923.

✦

Standpipes or Elevated Tanks for Water-Works Systems?—Comparative figures for same service prove cost of standpipe to be 50 per cent more than elevated tank. Only top 25 feet of standpipe are useful in gravity supply.—*American City*, 28:2, 128, Feb., 1923.

✦

Make Your Water-Works Grounds Attractive.—First impression of water-works plant, as of individuals, is gained from appearance. Half of 6,000 water plants in United States have no ornamentation or artistic treatment of grounds. Eighty per cent of water expenditures are underground and lost sight of by consumers.—R. E. McDonnell, *American City*, 28:2, 129, Feb., 1923.

A Primer of **City Planning Progress and Legislation.**—First partial zoning ordinance in United States at Boston in 1898, next in Los Angeles in 1909, and present day zoning activities throughout United States are discussed.—Miriam I. Ross, *American City*, 28:2, 131, Feb., 1923.

✤

Indianapolis Adopts Zoning.—First zoning ordinance of Indiana, in Indianapolis, was adopted by unanimous vote of Council. Districts established are: (1) dwelling-house; (2) apartment house; (3) business; (4) first industrial; (5) second industrial.—Lawrence V. Sheridan, *American City*, 28:2, 140, Feb., 1923.

✤

Official Recognition of Pittsburgh's Citizens Committee on City Plan.—City Council of Pittsburgh officially recognizes Major Street Plan and Playground Plan and agrees to work toward these plans in future improvement.—George Ketchum, *American City*, 28:2, 142 Feb., 1923.

✤

Dangers to the Sanitary Quality of Public Water-Supplies.—Direct discharge of sewage into sources of public water-supplies is recognized danger. Article cites dangers often overlooked, under following: indirect pollution, manured field, boating, bathing and fishing, ice cutting, lumbering, labor camps, highways and railroads, cross, cuts in reservoirs, carriers on watersheds, accident to and improper operation of purification plants, exhaustion and poor quality of purification chemicals and filter plant by-passes.—E. Sherman Chase, *American City*, 28:2, 161, Feb., 1923.

✤

A Three-Year Campaign Against the Mosquito.—Chamber of Commerce, Newport, R. I., initiated three-year program to clean and drain swamp areas adjoining city.—W. C. Campbell, *American City*, 28:2, 169, Feb., 1923.

✤

Power Requirements of Activated-Sludge Plants.—Variations in construction of plant and sewage handled make definite figure impossible. At Manchester, 30 H.P. per 1,000,000 gallons; at Sheffield, 32 H.P. per 1,000,000 gallons was estimated.—*The Surveyor*, London; *Eng. and Contr.*, 59:1, 242, Jan. 31, 1923.

Operating Costs of City Departments.—Tabulation of costs for 183 towns in United States, with 30,000 or more population.—*American City*, 28:2, 156, Feb., 1923.

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Garbage Disposal and the Daily Press.—Criticism of daily press for misstatement of facts in questions of garbage disposal.—*Eng. News-Record*, 9:5, 241, Feb. 1, 1923.

✤

Measuring Well Water Depth.—Cork float in perforated brass tube, inserted in well, starts buzzer when water level is reached.—Charles Brossman, *Eng. News-Record*, 90:6, 266, Feb. 8, 1923.

✤

Italian Garbage Process Ready for Use in U. S.—Beccari method of garbage disposal introduced by new American corporation.—*Eng. News-Record*, 90:7, 324, Feb. 15, 1923.

✤

The Present Status of Sewage Treatment in England.—Administration and policy questions, status of older types of treatment and outlook for activated-sludge process are discussed. Installation of new activated-sludge plants and conversion of old plants to this type indicate favor of this method of disposal.—George W. Fuller, *Eng. News-Record*, 90:5, 206, Feb. 1, 1923; 90:6, 252, Feb. 8, 1923; 90:7, 299, Feb. 15, 1923.

✤

Experiments on Formation of Floc for Sedimentation.—Results obtained from 56 tests with various turbidities over ten-month period. Time and velocity of sedimentation, with constant hydrogen-ion concentration, studied.—Edward S. Hopkins, *Eng. News-Record*, 90:5, 204, Feb. 1, 1923.

✤

Activated-Sludge Treatment at Manchester, England.—Research work with regard to sludge-dewatering carried on with several methods of sludge treatment. *The Surveyor*, London; *Eng. and Contr.*, 59:1, 244, Jan. 31, 1923.

✤

To Stimulate State-Wide Interest in City Planning.—With exceptional coöperation from Iowa State College, Chamber of Commerce prepared comprehensive plan for Mason City.—H. M. Van Auken, *American City*, 28:2, 166, Feb., 1923.

The Construction and Operation of Sewage Pumping Station at Schenectady, New York.—Mechanical details of plant and its operation are given. Analysis of raw sewage from midnight to 7 A.M. compares with trickling filter effluent for balance of day.—John V. Lewis, *American City*, 28:2, 143, Feb., 1923.

✣

Should a City Contract for Public Improvements or Do the Work with City Labor?—Advantages of city over contractor in public improvements.—Edward A. Beck, *American City*, 28:2, 109, Feb., 1923.

✣

Iron Bacteria in Water Mains.—Dosing with 0.5 parts per million of chloramine prevented development of crenothrix in iron bearing waters. Chloramine formed by treating dilute solutions of hypochlorites with dilute ammonia.—*Mun. Eng.*, London; *Eng. and Contr.*, 59:1, 245, Jan. 31, 1923.

✣

A Colorimetric Method of Analysis for Sewage Effluents.—Experiments showing relation between density of color in and oxygen consumed by sewage effluents carried out at Cheltenham. Results of oxygen absorbed tests, by acid permanganate method, and corresponding color values, from Lovibond tintometer, plotted on charts.—R. C. S. Walters and V. G. Pickering, *The Engineer*, London; *Eng. and Contr.*, 59:1, 258, Jan. 31, 1923.

✣

Successful Experiment in Salvage of House Refuse.—Eccles has system of salvage showing saving of £903 per annum in fuel values alone. Ashbin refuse collected in wagons is tipped on to conveyor band, carrying material to separating screen where cinders, dust, etc., fall through to another belt carrying it to a second screen which removes dust, allowing cinders to pass to furnace on another belt. Material salvaged is sold to highest market.—*Mun. Eng. and San. Record*, London; *Eng. and Contr.*, 59:1, 263, Jan. 31, 1923.

✣

Methods of Purifying Public Water-Supplies.—Prevention of pollution of watershed, purification of water by slow sand, rapid sand, pressure and gravity filters. Description of Clark and Puech Chabal process. Sedimentation, storage, treatment of colored water, iron removal and sterilization.—Norman J. Howard, *Canadian Engineer*, 44:7, 231, Feb. 13, 1923.

✣

Montreal Water-Works System.—By-law authorizing additional million dollars for improvements to be submitted to city council. Size of mains and filtration capacity to be increased.—*Canadian Engineer*, 44:7, 241, Feb. 13, 1923.

✣

Economical Control of Chemical Dose in Filter Plants.—Economical application of chemicals by watching condition and temperature of water.—R. A. Maddock, *Eng. and Contr.*, 59:2, 380, Feb. 14, 1923.

✣

Method and Costs of Cleaning Open Drains with Drag Line Excavator.—*Eng. and Contr.*, 59:2, 382, Feb. 14, 1923.

✣

Collection and Disposal of Municipal Refuse.—Methods in Iowa towns and cities described.—Earle L. Waterman, *Eng. and Contr.*, 59:2, 385, Feb. 14, 1923.

✣

Water-Supply Contamination by Mine Drainage.—Water flowing from mines after passing over coal beds is highly charged with sulphuric acid. Drainage has caused abandonment of some supplies. Processes of treatment for mine waters described.—J. W. Ledoux, *Eng. and Contr.*, 59:2, 389, Feb. 14, 1923.

✣

Operation of Mechanical Filters and Value of Laboratory Tests.—Tests of raw water to regulate chemical dosage aids coagulation and reduces load on filters. Cleaning coagulating basin and maintenance of filters.—P. G. Turner, *Canadian Engineer*, 44:8, 256, Feb. 20, 1923.

✣

Life of Water-Works Bonds.—Term of bond connected with life of plant and depreciation of property.—Charles W. Sherman, *Canadian Engineer*, 44:8, Feb. 20, 1923.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES

DRS. E. R. HAYHURST and N. C. DYSART

Prohibition of White Lead in Belgium.—A bill which would prohibit the use of white lead and sulphate of lead in the internal painting of buildings, with certain exceptions, has been recommended by the Third International Labor Conference of the League of Nations and is being prepared by the Belgian Ministry of Labor. The Municipal Council of Liege has adopted resolutions prohibiting the use of white lead in inside and outside painting work done for the municipality.—*Lancet* (London), Vol. CCIV, No. 5187, January 27, 1923, p. 214.

✣

Anthrax Control.—A committee denominated the "International Anthrax Committee," and composed of experts from various importing and exporting countries, was appointed by the Third International Labor Conference and held its first session in London from December 5 to 14, 1922. Resolutions were adopted as follows: (1) That hair used in the brush-making and upholstering industries shall be disinfected before the materials are handled industrially, and (2) that wool and hair to be used in the textile industry shall be disinfected before the materials are handled industrially, except in the following cases: (a) If the country of origin is included in the schedule of countries where the danger is slight. (b) If the material to be imported has already been disinfected by a process recognized as effective. (c) If wools and long hair have to be sorted before washing, unless these products are not included in the list of harmless products. (d) In such other cases as may be determined by the committee.

The list of countries where danger of anthrax is slight will be brought up to date each year by the Advisory Committee on Industrial Hygiene of the International Labor Office. The committee is of the opinion that in most countries the principal danger of industrial anthrax arises in the manipulation of hides and skins and recognizes the impossibility of securing at the present time complete disinfection to protect against this danger. The committee therefore recommends that regulations be laid down in the different countries looking toward the protection of the workers and the soil against infection by anthrax from hides and skins.—*British Medical Journal*, No. 3239, January 27, 1923, p. 162.

✣

The Blood Factor in Early Diagnosis of Lead Poisoning.—Fairly early in lead intoxication the red blood cells exhibit many and varied pathological changes but for some weeks there is usually only a picture of unequal sized cells (anisocytosis), an accumulation of cells easily stainable by various stains (polychromasia) and punctate basophilic cells. Thus lead acts directly on the bone marrow in a similar way to the toxin in a pernicious anemia. In the absence of serious anemia punctate basophilia is more likely to be caused by lead than by anything else. The diagnosis should depend, not on gross signs but on appreciation of suspicious symptoms and investigation of blood and urine. Whereas examination of the urine is a tedious process, the blood film is easy and almost as reliable.—Robert Craik, *British Medical Journal*, No. 3238, January 20, 1923, p. 103.

✣

Syphilis in Trainmen.—Citing several cases of syphilis of the central nervous system in trainmen, some of them resulting in serious accidents, the author concludes that all trainmen so afflicted should not be permitted to operate trains until it is proved that they are cured. They are unsafe because of the liability of sudden attacks of unconsciousness, of uncertain memory, of defective judgment, and because of the "ideas of grandeur" that characterize certain cerebrospinal cases. In trainmen, the danger to the life and property of the community demands that every case of suspicious illness—such as lapse of memory, failing vision, continued dizziness, erratic conduct, uncontrolled temper, and especially cases of employees who possess ideas of grandeur and are prone to boast of their ability and possessions—should be investigated minutely, and syphilis should be borne in mind as a possible cause. Little credence

should be given to the absence of positive history. All trainmen who have been disciplined for disobedience of orders in handling trains should not be permitted to return to work until a complete medical examination has been made. The "idea of grandeur" is a grave danger as the person is convinced of his superior intellect and his freedom from the usual restraining customs and orders of his life and occupation. Analysis of statistics forces one to the conclusion that a large number of trainmen were syphilitic at the time of employment. In cases where syphilis is acquired after employment, publicity propaganda must be depended upon to make the infected person recognize the dangers of the disease, and to lead him to seek early treatment. The author, in conclusion, suggests that in routine examinations more attention be paid to the genitalia for scars or other evidence of infection; to pupillary reactions; to absence or exaggeration of deep tendon reflexes; to the presence of pigmented scars over the shins, and to the Romberg test. All persons presenting deviation from normal should be carefully questioned and examined, and, if necessary, a Wassermann test should be made.—Page Edmunds, *Jour. of Ind. Hygiene*, Vol. IV, No. 9, January, 1923, p. 380.

✦

Occupational Diseases.— Although their occurrence was recognized by such early writers as Hippocrates and Galen and have been discussed by many others who have followed them it remained for Bernardo Ramazzini in 1703 to publish a treatise dealing exclusively with occupational diseases. His work was called de Artificum Diatriba and was translated into both French and English. "Occupational diseases" is a more comprehensive term than "industrial diseases" because a man who is occupied is not always engaged in manual labor, but he who is engaged in manual labor is certainly occupied. A disease may be called occupational when it is incurred in a vocation, industrial or otherwise, with such frequency as to compel the physician to ask himself: Why are these certain pathological phenomena so often associated with this certain calling? A well known disease not essentially industrial may acquire an occupational character because of national or geographical or other reasons. Malaria, for instance, assumed an occupational character when it killed 22,000 French workmen while they were attempting to build the Panama Canal. Syphilis is an occupational disease when it is contracted by such workers as glass blowers, dressmakers, shoemakers, and other workmen who become inoculated by holding in the mouth certain articles which fellow workmen have infected. It would seem that most diseases could become occupational in character if to a trade or industry, indifferent in itself as to health or sickness, injurious environments were to add such predisposing factors as: Insufficient amount of, or bad, or dustladen air, abnormal atmospheric conditions, improper temperature, poisonous gases, etc. The constant inhalation of dust (even nonpoisonous dust) by a person predisposed to tuberculosis will often result disastrously. The most harmful dust, outside of poisonous dust, is emery, and next to emery in deleterious effect, is sandstone. Every factory making use of poisons in its process should employ a company physician. Some industries, as the rubber industry, employ so many poisons that when a workman becomes ill it often taxes the doctor's ability to make a differential diagnosis. J. F. X. Jones, *Med. Insurance and Health Con.*, Vol. XXXI, No. 9, June, 1922, p. 332.

✦

Quick Method for Quantitative Determination of CO in the Blood.—The method for analyzing the blood for carbon monoxid was the so-called tannic acid method, slightly modified from the procedure which Sayers, O'Brien and Yant have been using at the Bureau of Mines Experiment Station. A finger is wrapped with a rubber band, a deep prick is made with a stiletto, and 0.1 c.c. of blood is drawn into a pipet. This blood is immediately delivered into a test tube in 0.4 c.c. dilute ammonia (1 c.c. of strong ammonia in a liter of water). It is essential that the blood and ammonia be immediately mixed so as to lake the sample completely, but the mixture must not be shaken or caused to foam. One and five-tenths cubic centimeters of tannic acid (1 per cent freshly prepared) is then added and mixed. It takes several hours for the color to develop, or rather for all color not due to carbon monoxid to be converted into the dull brown of the tannated blood proteins. Such samples are read against a scale which must be prepared at practically the same time. For this scale dog's blood is generally used: Five cubic centimeters of

the undiluted blood is thoroughly exposed to illuminating gas in a flask by bubbling the gas through the blood until it is completely in foam. One cubic centimeter of this blood is then laked in dilute ammonia. An equal amount of the original blood without carbon monoxid is similarly mixed with ammonia. By taking proportional amounts of these two solutions, mixing them and adding tannic acid solution, a scale is then prepared in a series of test tubes to show 10, 20, 30, 40, 50, 60 and 100 per cent saturation with carbon monoxid. The comparison is best made independently by at least two observers. Henderson, Y. and Haggard, H. W., *J. A. M. A.*, 79, No. 14, Sept. 30, 1922, 1137–1145.

✣

Resuscitation from Carbon Monoxid Poisoning.—"1. Manual artificial respiration by the prone pressure method should be employed, when respiration has stopped, to start spontaneous breathing. This object may be assisted by administering oxygen plus CO_2 simultaneously.

"2. Inhalation of oxygen and 5 per cent carbon dioxid, by causing a very full ventilation of the lungs, rapidly eliminates carbon monoxid from the blood and thus terminates the condition of asphyxia. This treatment is highly effective, inducing rapid and complete recovery, if applied early enough. It requires merely general medical supervision, and may be safely and efficiently carried out by intelligent men of the type composing the emergency crews of a city gas company.

"3. Until more definite knowledge has been obtained regarding the conditions in the lungs, brain and elsewhere, subsequent to gassing, and until treatment can be based on such knowledge and has been tested experimentally, it is inadvisable to apply any specific treatment in postasphyxial gassing cases. The evidence here reported indicates that oxygen plus CO_2 inhalation and rapid elimination of carbon monoxid greatly decreases the liability to nervous and pulmonary asphyxial sequelae.

Note.—"It has come to our attention that an attempt has been made to substitute, in place of the special inhaler which we have developed, one of the common artificial respiration devices, namely, the pulmotor. The pulmotor, like all other such devices, is, however, entirely unsuited to this purpose, and such use of it can do no good and may even do a patient serious harm. The inhaler which we have used was invented by us for the special and peculiar condition of the oxygen + CO2 inhalation. No other apparatus now available is capable of functioning as it does, and for the present at least no other should be used on our responsibility."—Henderson, Y., and Haggard, H. W., Jour. A. M. A., Vol. 79, No. 14, September 30, 1922, p. 1145.

Tannic Acid Method for Quantitative Determination of Carbon Monoxid in the Blood.—Since the occurrence of symptoms is in proportion to the degree of poisoning by CO it is highly desirable to determine the quantity of CO-Hb. In the method described a standard solution is made by adding 0.05 grm. of potassium citrate, or 0.02 gram of sodium fluoride per 10 c.c. of whole blood to prevent clotting. The blood thus obtained is divided into approximately equal parts, one of which is immediately diluted 1 in 10 with distilled water while the other is saturated with 3 to 5 per cent of CO gas, then diluted 1 in 10 with distilled water. From these solutions mixtures are made which total 1 c.c. but vary from none to 100 per cent CO-Hb in steps of 10. These are contained in test tubes of 5/16 inch inside diameter. To each standard thus obtained is added 1 c.c. of a mixture consisting of equal parts of a fresh solution of 2 per cent pyrogallic acid and a solution of 2 per cent tannic acid, after which the tube is inverted twice to insure thorough mixing. The tube should be immediately sealed by pouring a little melted paraffin on top of the contents. After the walls of the tubes have become dry, a disk of cardboard is laid on the paraffin and the remainder of the tube is filled with sealing wax. These standards remain permanent for several weeks.

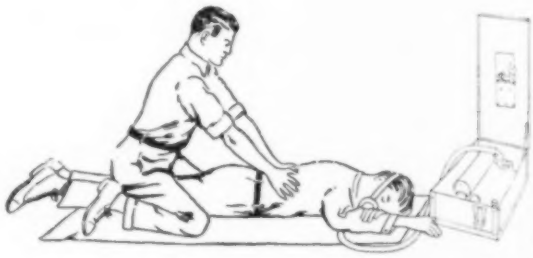
To determine the quantity of CO in the blood of a supposed victim of poisoning, measure into a tube of the same size and glass as used in the standards, 1 c.c. of a 0.05 per cent solution of potassium citrate or 0.03 per cent solution of sodium fluorid, depending on which of these was used in the standards. With a capillary pipette then draw up 0.1 c.c. of the subject's blood and quickly discharge this into the test tube, then add 1 c.c. of the mixture of pyrogallic and tannic acids as previously described. After inverting twice and allowing to stand for 8 to 10 minutes, a comparison can be made with the standards and the percentage noted. It is well to prepare a similar sample from an unexposed subject, thus insuring against spoiled reagents or change in standards.—R. R. Sayers, *U. S. Public Health Reports*, Vol. 37, No. 40, October 6, 1922, p. 2433.

The H.-H. Inhalator for the Elimination of Carbon Monoxid.— Among the most serious practical difficulties to administering oxygen containing 5 per cent CO_2 is the fact that no such gas mask is at present on the market. This investigation is therefore deeply indebted to the Union Carbide and Carbon Company, and the Linde Air Products Company, for most generously making and freely supplying all of the oxygen and carbon dioxid used in these researches. During the war one of the authors had developed certain features of an apparatus for administering oxygen to soldiers suffering from irritant gases. In the laboratory, meanwhile, a device had been developed for the control and measurement of the flow of gas. Meanwhile also, the sylphon bellows reducing valve, the most perfect device of its kind, had been developed by Mr. W. E. Gibbs, for the U. S. Bureau of Mines and patented by the Government for general use. Using these three features the apparatus shown in the accompanying figures was developed under the direction of the writers by the Mine Safety Appliances Company, Chamber of Commerce Building, Pittsburgh, Pa. "The apparatus consists of a steel tank or bottle charged to about 120 atmospheres of oxygen and 6 atmospheres of carbon dioxid, that is, 5 per cent with an allowable variation of ± 0.5 per cent carbon dioxid. The bottle is connected with the reducing valve, which automatically delivers any quantity of gas that may be drawn at a uniform pressure of about 1.5 pounds per square inch. The gas then passes through the graduated needle valve, which serves both as a control and as a meter for estimating the volume of breathing, so that the supply to the patient can be adjusted to any volume from 0 up to 30 liters a minute. From this needle valve the gas flows into a bag of rubber and cloth of 4 or 5 liters capacity. Beyond this bag is a pair of disk valves arranged on a T so that the upper one, which has a very light disk, allows the patient to inhale the contents of the bag at the beginning of a respiration while the lower valve with a heavier disk only opens to admit outside air after the bag has been sucked empty. From the upper disk valve a hose of 0.8 inch bore leads to a snout mask. On the mask is an expiratory valve. This apparatus has been given the name of the H.-H. inhalator.

The following sheet of instructions is put into each of the inhalator boxes:

DIRECTIONS IN BRIEF

I. Open valve at top of tank.
II. Put mask on victim.
III. Turn pointer on dial to 10.
IV. Keep advancing pointer as victim breathes more.
V. Use for from twenty to thirty minutes.



Henderson, Y. & Haggard, H. W., *J. A. M. A.*, Vol. 79, No. 14, Sept. 30, 1922, p. 1141.

✤

Zinc Poisoning.—A sudden outbreak of illness occurred recently amongst the inmates of a large institution near London which indicates the danger which may arise from the *use of galvanized iron vessels for cooking purposes*. About 400 persons were served at tea with hot stewed apples. The remainder of the meal consisted of bread and margarine and tea. Within a few minutes more than 200 of those who partook of the stew complained of dizziness, sickness, or a feeling of

sickness, colic, and tightness in the throat. There was some diarrhea, but no double vision. The medical officer at once administered doses of bismuth and chalk mixture and within a short time most of the sufferers had recovered and were able to take supper at 7.45 P. M. Only 10 persons were at all seriously ill, and all of them were able to carry out their ordinary work next day, so that obviously the effects of the poisoning soon passed off. The apples were freshly gathered and stewed in large galvanized iron "skeps" which were placed in iron steamers. The skeps were used because it had been found on a previous occasion that the apples became black if placed directly in the steamers. A chemical examination of some of the stewed apples remaining over from the meal showed that they contained *7 gr. of zinc expressed as zinc oxide per pound*—this being equivalent to 25 gr. of hyrated *zinc sulphate to the pound*. The emetic dose of zinc sulphate is 10–30 gr. and each person consuming the stew may be assumed to have taken *18–20 gr. of sulphate of zinc*.

It is well known that vegetable acids are prone to act on metals, and the cause of the outbreak in question hardly seemed in doubt from the first. But expert scientific opinion states that vessels of galvanized iron should never be used for containing food materials in view of the solvent properties which many of these possess for zinc. It seems well that the general public should be aware of this fact. *Lancet* (London), Vol. CCIV, No. 5188, Feb. 3, 1923, p. 242.

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Intoxication with Benzene and Benzin; Toxic Agent.—Duvoir emphasizes the necessity to distinguish between the cyclic compound benzene and the aliphatic benzin, which is ten times less toxic. Besides, it is necessary to make an exact analysis of the poisoning substance, because there are different amounts of impurities in benzene, which may be very toxic. Faure-Beaulieu and Levy-Bruhl report a case of anemia due to professional contact (inhalation) of benzene of the highest purity.—Abstract from *Bulletins de la Société Médical des Hôspitaux*, Paris, November 24, 1922, by *J. A. M. A.*, Vol. 80, No. 3, January 20, 1923, p. 213.

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CHILD HYGIENE

TALIAFERRO CLARK, M.D.

Sight-Saving Classes.—H. Wright Thomson (*British Medical Journal*, Dec. 30, 1922) reviews the work of the "Myope" Classes in the schools of Glasgow. The designation of these classes is a misnomer because children visually defective from causes other than myopia are being educated in them.

Prior to the establishment of such classes children with low visual acuteness had either to attend ordinary classes under a severe handicap or be relegated to the classes among the blind. Although the future economic efficiency of such children is limited, increasing experience has shown, other things being equal, that the ability to earn a living for a person with low vision is much greater if he has been trained in the methods of seeing than if he is limited by and is dependent on the acquired attributes of the blind.

The essentials of a sight-saving class are that all print to be read, writing to be done and illustrations to be seen are on such a large scale as to require only a low visual acuteness, and obviate the necessity for a higher degree of convergence. Under such conditions, it is easy for a child with a relatively low visual acuteness to take a high stand in the sight-saving class without detriment to his eyes.

In examining candidates for the sight-seeing class, it is not sufficient, especially in young children, to register vision in the usual way, but one must also make an estimate of the child's intelligence and consider the prognosis as regards the condition of the eyes. It is necessary to feel assured that vision is not likely to become worse in the future. The time of the onset of the visual difficulty must also be taken into consideration; if the difficulty is congenital or nearly so, the cerebral vision must be below the average standard from lack of normal exercise. This faculty is capable of great improvement under the stimulus of constant regulated practice in looking at enlarged articles and the improvement not

infrequently expresses itself in an increase in visual acuteness, as tested by the Snellen's Types.

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The Preventorium and Its Relation to Tuberculosis in Childhood. — Clifford (*Boston Medical and Surgical Journal*, January 18, 1923) calls attention to the importance of prevention rather than the cure of disease and emphasizes the lack of knowledge of the factors which cause a latent tuberculous infection in a given child to become active disease in later life. For this reason efforts must be concentrated on treating potentially tuberculous children who, though not acutely diseased, yet have a tuberculous infection, by the early diagnosis of tuberculosis in childhood and preventing children who are infected from developing the disease.

Until very recently but little had been accomplished in this country for the child with tuberculous infection without clinical manifestation. Open-air classes and day camps are excellent for the undernourished child coming from healthy homes, but to safeguard a child coming from a home where tuberculosis exists, it is necessary to remove him for such length of time as may be needed to build up his resistance. This need is met by the preventorium, a place not of cure but of prevention, as the name implies. Preventorium treatment must be supplemented by follow-up work and repeated physical examinations after the patient is discharged.

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Child Health Demonstration.—It is announced that Fargo, N. D., has been chosen as the city for the first of the three five-year child health demonstrations to be financed by the Commonwealth Fund. Three cities are to be chosen, each more or less typical of a different section of the country, for the carrying out, with the co-operation of local officials, of a complete child-health program. The committee decided that the first demonstration should be made in a city in the upper half of the Mississippi Valley region, with a population of 15,000 to 25,000 and an infant mortality rate of approximately 100 per 1,000 live births. Dr. William J. French has been chosen director of the demonstration at Fargo.—*Monthly Digest*. Nat. Health Council, Jan., 1923.

Proposed Constitutional Amendment to Prohibit Child Labor.—Hearings on the proposed constitutional amendment to give Congress the power to limit or prohibit child labor were held before a subcommittee of the Senate Judiciary Committee on January 10. The speakers at the hearing included Miss Julia Lathrop and representatives of the following organizations: The American Federation of Labor, U. S. Children's Bureau, National Consumers' League, National Child Labor Committee, Federal Council of the Churches of Christ in America, National Catholic Welfare Council, League of Women Voters, Parent-Teacher Associations, Council of Jewish Women, Women's Christian Temperance Union, National Federation of Business and Professional Women, American Federation of Teachers, Women's Trade Union League, National Council of Catholic Women. A statement was read from Mrs. Emily Newell Blair, Vice-Chairman of the Democratic National Committee. Among those who asked to be permitted to submit statements at a later hearing were Mrs. Harriet Taylor Upton, Vice-Chairman of the Republican National Committee, and representatives from the General Federation of Women's Clubs, the Girls' Friendly Society, and the Young Women's Christian Association. The hearing was adjourned to January 15th.—*Weekly News Summary*, Children's Bureau, Jan. 13, 1923.

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Maternity Act.—A report on the administration of the Maternity and Infancy Act is included in the recently published annual report of the chief of the Children's Bureau for the year 1922.

The board has laid down no plan of work which the States must follow, it being the intention of the act that the plans shall originate in the individual States and be carried out by them. The State plans already submitted and approved differ widely according to local conditions. They range from preliminary educational work to the expansion of existing and well-developed operations. One State whose counties are fairly well organized for public health work will place nurses in the organized counties to devote themselves to maternity and infancy care. This State will also maintain prenatal and child-hygiene centers and will supervise midwives and maternity hosp-

tals. Another State will increase the number of its prenatal and well-baby clinics and will employ eighty public-health nurses to give half time to maternity and infancy work, and four nurses to give full time, with two field physicians and six supervising nurses. A third State will have a staff of nurses large enough to make possible a visit to each new-born baby and supervision of boarding homes; it will employ two social workers to give special attention to the problem of preventing unnecessary separation of mothers and babies; it will offer prenatal care and instruction in infant care to mothers, and will investigate maternal deaths, supervise midwives, and cooperate with hospitals.

A State which has not yet matched the full Federal apportionment, and hence has only the $10,000 granted outright for the fifteen months ending June 30, 1923, proposes to employ the school nurses of the State during the summer for infant-welfare work, and to "make its first survey of the State's problems—geographic distribution of maternal and infant deaths, causes, available local facilities, etc." Eighteen of the States accepting the act have not yet sufficiently complete registration of births to be admitted to the United States birth-registration area, and practically all of these are making the act a basis for a new effort to secure complete registration of births and deaths.

One State will make a study of the racial elements of its population and conduct campaigns to secure the reporting of cases of infant blindness, the use of "drops" in the eyes of new-born babies, and birth registration. In counties having full-time health service it will endeavor to secure the adoption of a program of maternity and infancy care. It will also establish training and demonstration centers in localities of various types. Still another State will have monthly conferences at a series of maternity centers throughout the State, with child-health conference on a similar plan, and will organize "Little Mothers Classes" in the schools.

Altogether forty-two States to date have accepted the terms of the act, according to the report, twelve acceptances being by legislatures and the remaining thirty by governors pending the next regular session of legislature. Porto Rico and Hawaii, not included in the provisions of the act, have expressed their desire for inclusion.

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PUBLIC HEALTH NURSING

ANNIE M. BRAINARD, R.N.

Prevailing Fallacies in Health Education.—To see health values in their relationship to the whole of life is far more important than merely to hold up the slogan of "Health for Health's sake." With the great wave of interest in health there have swept over the country also certain fallacies which arise from a too narrow and circumscribed viewpoint. The first of these fallacies is that health is primarily physical; such a view leads to programs which include only such devices as brushing the teeth, washing the hands and careful chewing of food. The realization that health is mental and social as well as physical leads to a proper emphasis on the unity of body, mind and spirit in man.

The second fallacy is that which views health as quantitative, as the "building up" of a certain tangible amount of health, rather than acknowledgment of the fact that health flows from correct living and comes as a by-product of life that is wholesome and fine. Health, like happiness, is lost when sought as a direct goal. This fallacy is exemplified in the person who attends a gymnasium for health purposes, and then violates in life the laws of healthful living—or in one who takes vitamins in bottled form and seeks in that way to remedy the faults of an ill-balanced diet. It is a failure to realize the truth that health is a stream from wholesome living.

A third fallacy is that of viewing health merely as knowledge, whereas knowledge of hygiene is only useful in precisely the degree that it is practised in life. Knowledge of hygiene should mean practice first and foremost, and secondly should deal more with problems of living, of human

adjustment, of scientific truth, of attitudes and ideals.

Still a fourth fallacy views health as the end of life. It should never be an end, except for the person who is sick. It is only significant in its relation to other values—as a means for the realization of worth while things in life; as a condition to enable us to live most and to serve best. —Jesse F. Williams, *The Public Health Nurse*, Feb., 1923.

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Municipalities and the Giving of Bedside Care in the Home.—Dr. Merrill R. Champion, in what is announced as the first of a series of articles discussing the subject of the giving of bedside care by nurses of a municipal health department, outlines his view that the real public-health nurse should give up bedside work and carry on only educational or "instructive" work. Dr. Champion states the case in the form of two alternative dilemmas, as follows:

1. "Shall municipalities, through their health departments and at public expense, take over all the activities of the nurse, bedside as well as educational?"

2. "Shall the municipality confine itself to educational health activities, leaving bedside work to private agencies?"

The first dilemma subdivides again into the questions: (a) Shall the municipality furnish this service free of cost to all citizens? (b) At cost to those who can pay, less than cost to the less well off, and free to those unable to pay? If furnished free to all, the specter of State Medicine arises; if given to the poor only, why maintain two departments for poor relief? Why not place all under the overseers of the poor? Again, the individual or family is too ready to let the community take responsibility to furnish things which it should not furnish—why pauperize people by offering them for nothing things which they should pay for?

The second dilemma seems less sharp. It may mean some duplication of effort, but the fear of such duplication is exaggerated. Bedside nursing undoubtedly forms a good method of approach to the patient, but the nurse doing educational work only is not finding it difficult to enter the family. Dr. Champion summarizes as follows:

1. What we call public-health nursing has come to stay.

2. The key words of public-health nursing, so called, are educational and public; bedside nursing *per se* is treatment and individual.

3. The municipality, through its board of health, is justified in expending public funds for health educational work.

4. The municipality cannot wisely expend municipal funds through its board of health or any other board for free medical treatment for rich and poor alike. This tends to lessen the precious sense of individual responsibility and tends to make paupers.

5. The municipality may wisely expend money for medical treatment (including nursing) of the poor, but should spend it through the agency created by law to give material relief, namely, the overseers of the poor.

6. Plain common sense as well as logic leads to the conclusion that the path of wisdom lies in the direction of two types of service: one educational, under the board of health; one bedside nursing, under a private agency, the latter, of course, doing all the educational work it can in connection with its work of treatment.

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Speaking editorially in the same issue of *The Public Health Nurse*, Isabel W. Lowman presents the point of view that it is difficult to understand how the nursing care of the sick can pauperize those who receive it, since one of the principal effects of good nursing care is "to return the laborer more promptly to the shop, the mother to her household duties, and the child to the school." "Illness is perhaps the tap root of pauperism and any group of persons whose object is to help the sick to get well as promptly as possible and to teach such principles and practices of hygiene and sanitation as will give poor and rich alike a better understanding of how to remain well represent, to our way of thinking, one of the strongest forces against pauperism in the whole economic field."

Citizens are interested in having their tax money spent to the best advantage, and this can be brought about by the most complete interpenetration of public and private services and the least possible duplication of effort. In addition, since faulty conditions in towns and cities are responsible for the illness of the poor, it would seem only

just that the municipality should assist the sufferer to recover his working power as promptly as possible; and it should certainly be less expensive to care for the patient in his own home than in a hospital. Why, indeed, should the municipality acknowledge its obligation to give nursing care in a hospital, yet feel such care to be superfluous in the home?

Further articles dealing with this same subject are to follow.—*Public Health Nurse*, Feb., 1923.

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PUBLIC HEALTH LEGISLATION*

JAMES A. TOBEY, LL.B.

PROGRESS ON MATTERS PREVIOUSLY CONSIDERED

S. 3544. Transfer of Activities of Interdepartmental Social Hygiene Board to Department of Justice.—Favorably reported by the Committee on the Judiciary to the Senate with recommendations for an amendment. In transferring the powers of the Interdepartmental Social Hygiene Board to the Department of Justice, they are somewhat enlarged by authorizing inquiry into vice conditions in the vicinity of Army and Navy camps, posts, stations, forts, ports or hospitals. The Justice Department is authorized to use all lawful means for the prevention and repression of vice conditions. The report submitted to the Senate contains letters recommending the passage of the bill from Major General M. W. Ireland, Surgeon General of the Army and chairman of the Interdepartmental Social Hygiene Board; Hon. John W. Weeks, Secretary of War; W. H. Gordon, Brigadier General, U. S. Army; Hon. Theodore Roosevelt, Acting Secretary of the Navy, and Hon. H. M. Daugherty, Attorney General. The sum of $325,000 is appropriated to carry out the terms of the bill. The amendment changes the date of this appropriation to the fiscal year ending June 30, 1924, instead of 1923.

The bill came up for consideration in the Senate on February 12, and after some discussion was objected to and so passed over to resume its place on the calendar.

H. R. 11490.—The similar House bill was reported by the Committee on the Judiciary on February 12, 1923.

S. 3968. Prevention of Oil Pollution of Navigable Waters.—Reported House, February 23, 1923. This measure, which passed the Senate on August 25, 1922, was favorably reported to the House by the Committee on Rivers and Harbors. The report (No. 1569) adopts amendments passed by the Senate and quotes letters of approval from authorities on the subject. According to the terms of the bill, the deposit of any refuse, including oil, into any navigable stream of the United States is specifically made unlawful.

S. 4305. Increase of Pensions to Veterans and War Nurses.—Senate Report No. 1076. The Committee on Pensions reported this measure favorably with amendments to the Senate on January 29, with the announcement that the objectionable features which caused President Harding to veto a similar bill on January 4, 1923, had been eliminated. A pension of $72 a month is given to veterans of the Mexican and Civil wars; $50 a month to their widows or former widows, with $10 a month additional for dependent children. Nurses of these wars are also given $50 a month.

S. 4352. Federal Aid for States in Control of Drug Addiction.—This measure, originally referred to the Committee on Appropriations of the Senate, was transferred to the Committee on Finance on January 30, 1923. A summary of the terms of the legislation proposed in it will be found in the March Journal.

H. R. 13046. Conveyance of Marine Hospital Reservation at Wilmington, N. C.—Passed Senate, February 5, 1923. This act authorizes the Secretary of the Treasury to sell to the city of Wilmington, N. C., the Marine Hospital Reservation owned by the Government there, the property being no longer of use. A stipulation fixes the sum of $20,000 as the smallest amount that shall be accepted by the Secretary of the Treasury.

H. R. 13272. Granting City of Miami,

* Provided by courtesy of National Health Council.

Florida, Right to Construct Sewage Drain Across Government Land.—Passed House, February 19, 1923. Passed Senate, February 24, 1923. This measure grants to the city the right to construct drainage across certain government lands at Miami, Florida, but reserves the right to alter the plans. The Secretary of War had recommended the passage of the bill, provided the specifications were approved by the Board of Engineers of the Army.

S. 3588. Protection of Water Supply of City of Ogden, Utah.—The Senate Committee on Public Lands and Surveys has favorably reported this measure with amendments to the Senate for passage. Its terms permit the Secretary of the Interior to issue a patent to the City of Ogden, Utah, for certain public lands in Utah to protect the watershed of the water supply of the city. The principal amendment placed in the measure by the committee was the payment of $1.25 per acre to the Government by the city for the property rights.

S. 2822. Regulation of Practice of Optometry in District of Columbia.—Favorably reported to the House by the Committee on the District of Columbia on February 1, 1923 (House Report No. 1503). This measure, which passed the Senate January 8, 1923, authorizes the appointment of a Board of Optometry, consisting of five persons, for the examination of those desiring to engage in the practice of optometry in the District of Columbia. It would be unlawful for any person to practice without first obtaining a license from the board.

NEW LEGISLATION

(Matters Not Previously Considered)

H. R. 14238. Reduction of Narcotic Tax Imposed upon Physicians, Dentists, and Veterinary Surgeons.—Introduced by Representative Kindred, February 7, 1923. Referred to the Committee on Ways and Means. Citing the fact that the Internal Revenue Bureau collected the sum of over $610,000 last year in taxes from physicians, dentists, and veterinary surgeons on narcotic drugs, and that this amount was greatly in excess of the cost of enforcing the Narcotic Act during that period, this amendment proposed the reduction of the tax from $3 to $1, with a similar reduction for importers, manufacturers, wholesale dealers, and other persons who handle narcotic drugs lawfully. The measure advances the argument that the prevailing high tax is contrary to public policy because it in reality imposes a tax upon suffering and disease and makes patients who need narcotics because of illness pay this high revenue to the Government.

H. J. Res. 430. Limiting the Production of Habit-Forming Narcotic Drugs.—Introduced by Representative Porter, January 31, 1923. Referred to the Committee on Foreign Affairs. Citing the growth in the unlawful use of narcotics in the United States, with its irreparable injury to health and morality, this resolution calls upon the President to urge the Governments of Great Britain, Persia and Turkey to consider the immediate necessity of limiting the growth of the poppy and the production of opium and its derivatives, except in such amount as is actually required for strictly medicinal and scientific purposes. The resolution also requests the President to importune the Governments of Peru, Bolivia and the Netherlands regarding the same necessity for limiting the production of cocoa leaves and their derivatives. The resolution asks that the President report to Congress within six months after the passage of the resolution the result of his action. Hearings on this resolution began on Tuesday, February 12. Chairman Porter of that committee called physicians to testify as to the baneful effects of narcotics upon health and morality. Also, he has called officials from the Federal Narcotic Bureau, who are especially informed with reference to the habit-forming drugs. Among the witnesses are Assistant Attorney General John W. H. Crim of the Department of Justice, who has made a study of the narcotic situation from the point of view of his Department.

H. R. 14271. Suppression of Venereal Disease.—Introduced by Representative Herrick, February 9, 1923. Referred to the Committee on Appropriations. This proposed act would appropriate the sum of $25,000 for use in the several States making a like appropriation for the suppression and eradication of venereal disease. The money would be immediately available upon action taken by any State, and the money would be expended by the public health officers of the State. H. R. 14303. Intro-

duced by Mr. Herrick, February 12, 1923. Referred to the Committee on Appropriations. In this second bill the sum of $1,200,000 would be appropriated to match sums made available by the States for the suppression and eradication of venereal diseases.

H. R. 14133. Awards to Persons Assisting in Enforcement of Anti-Narcotic Law.—Introduced by Representative Lineberger, February 1, 1923. Referred to the Committee on Ways and Means. This measure provides that persons giving information leading to the conviction of offenders and recovery of narcotics shipped illegally into the United States shall be rewarded, their payments to be made out of the fines paid by convicted persons or from forfeited bail of violators of the law.

S. Res. 439. Investigation of U. S. Veterans' Bureau.—Passed Senate, February 12, 1923. This resolution states that there is reported waste and lack of coördination in the U. S. Veterans' Bureau and authorizes a Senate committee, of which Mr. Sutherland is chairman, to investigate conditions, reporting to the Senate in seven days whether a more complete and thorough inquiry is necessary.

H. R. 14267. Baptist Hospital Association Authorized to Use Lands in Hot Springs National Park.—Introduced by Representative Wingo, February 9, 1923. Referred to the Committee on Public Lands. The Secretary of the Interior is empowered to permit the use of a six-acre site in the Hot Springs National Park, Arkansas, by the Baptist National Hospital Association, upon which it is proposed to erect a suitable hospital and other minor buildings.

S. 4476. Conveyance of Arkansas Hospital Reservation.—Introduced by Senator Caraway, January 29, 1923. Passed Senate, February 24, 1923. This bill provides for the transfer of a Veterans' Hospital Reservation at Fort Logan H. Roots, Arkansas, to the Big Rock Stone and Construction Company.

H. R. 14290. Sites for Convalescent Camps for Disabled Veterans.—Introduced by Mr. Gallivan, February 10, 1923. Referred to the Committee on Interstate and Foreign Commerce. This bill would authorize the appropriation of $5,000,000 for acquiring rest camps for convalescent veterans.

H. R. 14226. Amends Federal Compensation Act.—Introduced by Mr. Volstead, February 6, 1923. Referred to the Committee on the Judiciary. This bill amends the act of 1916 relating to compensation for Government employees suffering injuries by including among "injuries" diseases caused by employment. The term "physician" is amended to include surgeons.

CONGRESS ADJOURNS

The 67th Congress adjourned on March 3, 1923, and the 68th Congress will probably not convene until next December. In our next issue we will present a review of health legislation in the 67th Congress and also progress on matters which we were unable to report in this issue.

SUPREME COURT OF DISTRICT OF COLUMBIA UPHOLDS FEDERAL MATERNITY AND INFANCY LAW

The Chief Justice of the Supreme Court of the District of Columbia upheld on February 16, 1923, the constitutionality of the Federal Maternity and Infancy Law. This act had been questioned in a suit brought by Harriet A. Frothingham of Massachusetts against the Secretary of the Treasury and other Federal officials who administer the so-called Sheppard-Towner Law. Judge McCoy said:

"A court should not decide that a statute is unconstitutional unless it is clearly so. This is true especially of a trial court presided over by a single judge who has no opportunity for responsible consultation, such as is had in courts of appeal.

"Congress is the body which, in the first instance, has the duty of deciding whether a proposed law may be constitutionally enacted and has made appropriations apparently under the general welfare clause. This fact alone raises a doubt sufficient to lead to a decision that the demurrer here should be sustained until a more critical criticism of that legislation on appeal.

"Motion to dismiss granted."

The case will be appealed to the District of Columbia Court of Appeals and from there to the U. S. Supreme Court, where it will probably be considered with the suit brought by the Commonwealth of Massachusetts against the same law.

D. C. COURT OF APPEALS RULES ON TUBERCULOSIS SCHOOL

The Court of Appeals of the District of Columbia has handed down an opinion in a case which was brought by several residents of the District of Columbia against the Commissioners of the District to prevent the latter from erecting a school for tuberculous children on a site of ground north of Upshur Street in the City of Washington. On this site there is already a municipal hospital and a junior high school. Congress had appropriated a sum of money for the erection of a school for tuberculous pupils although it had not stated in the act just where this school should be placed. The Court of Appeals examined all of the Acts of Congress since 1900 referring to this matter but failed to find any authorization for the erection of the "building for the care of tubercular pupils" on this particular location. Although the site was designated for a tuberculosis hospital the court does not think that this covers the school for pupils having tuberculosis. Having considered the matter purely from the standpoint of the law, the Court accordingly dismisses the appeal of the Commissioners of the District of Columbia from the decision of the D. C. Supreme Court which granted the injunction brought by the complainants. The effect of the opinion is to prevent a school for tuberculous children from being erected on the Upshur Street site. This case, aside from the fact that it holds up the erection of a much needed school for tuberculous children in the District of Columbia, shows the necessity for getting specific and unquestionable legislation for public health items and sociological matters. Through a legal technicality, a matter of great benefit to the prevention of tuberculosis has been handicapped and postponed for some time.

REORGANIZATION OF THE ADMINISTRATIVE BRANCH OF THE NATIONAL GOVERNMENT

The Institute for Government Research of Washington, D. C., has issued a book which considers the general problem of the reorganization of the administrative branch of the Government and outlines a scheme for such reorganization. Of interest to sanitarians is the fact that Mr. Willoughby, the Director of the Institute and author of the book, proposes a Department of Public Health and devotes a chapter to this subject. In this Department, he would place the Public Health Service; the Division of Vital Statistics, now in the Bureau of the Census; the Enforcement of Pure Food and Drug Laws, now in the Bureau of Chemistry; the Inspection of Meat Service, now in the Bureau of Animal Industry; the Bureau of Immigration; the Superintendent of Prisons; St. Elizabeth's Hospital; the National Home for Disabled Volunteer Soldiers; the Columbia Institute for the Deaf; and the American National Red Cross.

Following is a quotation from this chapter:

"The fundamental reasons actuating this recommendation are that the promotion of the public health is now one of the recognized functions, that the Government is now maintaining a number of distinct services, the activities of which have no direct relation to the functions of the departments to which they are now attached; that in the interests of these departments it is desirable that they should be relieved of responsibilities and work in no way pertaining to their primary duties; and that only by its grouping of these services in a separate department is it possible to adhere to the principle of having a strictly unifunctional character."

As will be outlined in our next issue, under the Section on National Legislation, a plan has been submitted to Congress by the President which would reorganize the Federal Executive Departments. This official plan calls for a Department of Education and Welfare which would include within its scope the public health functions of the Government.

✣

Georgia

Dr. Victor H. Bassett, whose dismissal for political reasons was noted in our issue of October, 1922, has been returned to his position as Director of the Hygienic Laboratory of the Board of Sanitary Commissioners of Savannah, Ga., and has in addition been made Acting Health Officer and charged with the duty of putting the health department of Savannah out of politics. It is proposed to fill the position of health officer by a competitive examination and to place the department on a permanent non-political basis.

STATE HEALTH NOTES

Canada

A letter received from Dr. W. H. Hattie advises that he has been appointed to the Professorship of Hygiene and Public Health at Dalhousie University, Halifax. Dr. A. C. Jost has succeeded him as Provincial Health Officer.

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Colorado

Dr. Charles A. Powers, well known throughout this country as a teacher and surgeon and especially as an enthusiastic supporter of the American Society for the Control of Cancer, passed away on December 23, 1922. He was found dead in his room at the University Club, having died from apoplexy.

✤

Illinois

The pronounced success of a thoroughgoing mosquito-malaria eradication campaign carried out last year in Carbondale has led to the serious consideration of a similar undertaking in the near-by city of Murphysboro. A survey of the entire situation at Murphysboro and an estimate of the first season's cost have already been made and certain civic organizations are sponsoring the plans for a campaign. At Carbondale the work was accomplished through the coöperation of the International Health Board, the Illinois Central Railway Company, the State Department of Public Health and local agencies. The assistance of the same organizations, with the exception of the railway company, is available for Murphysboro. It seems probable that the new work will be undertaken.

✤

Vital statistics figures of the State Department of Public Health corrected to February 1, 1923, show that the Illinois death rate in 1922 was the lowest on record with the single exception of that for 1921. The figures show a total of 75,599 deaths from all causes, giving a rate per 1,000 population of 11.3, as compared with 11.1 for 1921. The lowest record for any previous year per 1,000 population was 12.0 for 1919. It is estimated on the basis of past experience that the final death rate figure for the state for 1922, after all delinquent reports have been received, will not exceed 11.5.

Dr. Edith B. Lowry of the U. S. P. H. S., has been assigned to direct a demonstration in the medical inspection of school children at Elgin. The demonstration was undertaken at the request of the local superintendent of public schools while the local board of health and the State Department of Public Health are coöperating in the project.

✤

A revised edition of rules and regulations relative to the reporting and handling of influenza cases has been published by and are available for distribution from the State Department of Public Health, Springfield.

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In an effort to prevent the recurrence of typhoid fever epidemics traced to carriers and at the same time to avoid the necessity and hardship of quarantining those demonstrated to be carriers, the State Department of Public Health has drawn up a contract which all known carriers of typhoid fever will be required to sign and comply with in order to escape continuous quarantine. The contract simply constitutes a signed agreement to the effect that the carrier will practice the most rigid personal hygienic rules and will not engage in occupations that make the handling or preparation of food necessary. It further requires a semi-annual report from the carrier of any contemplated change in address. There are some 30 known typhoid fever carriers in the State, including Chicago, at present and eight of these have signed the contract. The others will be given an opportunity to sign as soon as it is practical.

✤

Arrangements have been completed by a field dental unit of the U. S. P. H. S. to carry out demonstrations among school children in a number of the smaller towns in Illinois. The State Department of Public Health has actively coöperated in establishing a schedule and in completing other preliminary matters. Elgin, Mattoon and Hillsboro are three points definitely decided upon for demonstrations. The program at each point will extend over a period of from one to two weeks and is

meant simply to bring clearly to public attention the distinct need for regular dental service, especially among children.

✤

During the last two weeks in January the State Department of Public Health furnished speakers to give lectures on public health before farmers' institutes at Sullivan, Paris and Paxton and before a county home bureau meeting at Aledo. Health exhibit equipment was displayed at Paxton and Pontiac. At Paris three lecture periods were devoted to public health subjects. There has also been a very noticeable increase in demands for public health literature and for professional advice from rural districts.

✤

The State Department of Public Health has unqualifiedly endorsed the movement at Washington to coördinate under a cabinet officer the various public health and welfare units of the federal government. Letters to this effect have been forwarded by the director of public health to the United States senators and representatives from Illinois.

✤

Indiana

The State Board of Health, during the fall of 1921, established "A Traveling Milk Laboratory." It is in charge of a dairy bacteriologist, who goes from city to city making surveys and assisting the local authorities. There is no cost to the city except furnishing a room in which the work can be done, the room to be supplied with light, heat, water, gas and electric current. The bacteriologist goes from place to place in a Ford coupé. Bacteriological examinations and sanitary inspections of the milk plants and dairies are made. The work is educational both for the producer and the consumer. Coöperation and assistance is the guiding motive. Interesting facts have been brought to light in the various towns. The problem of a safe milk supply is said to be receiving considerable attention in many of the cities of the state. This is a novel idea which is well worthy of consideration and adoption.

✤

Michigan

Dr. Robert S. Burke, tuberculosis specialist with the Michigan Department of Health clinical unit from Sept. 1, 1922, to Dec. 16, died suddenly on the latter date. Dr. Burke came to the Department of Health from the Chicago Dispensary. He is survived by a wife and two children. Dr. John I. Pinckney, formerly of the Westfield State Sanatorium, Westfield, Mass., has been chosen to succeed Dr. Burke. Dr. Pinckney was graduated from the University of Vermont with the class of 1906. After six years of general practice, he joined the staff of the Rhode Island State Sanatorium at Wallum Lake, R. I., going from there to Westfield where he remained until he assumed his present position with the Michigan Department of Health.

✤

Lucy Elliott, M.D., of Flint, has been added to the staff of the Bureau of Child Hygiene and Public Health Nursing to conduct prenatal work. Dr. Elliott is a graduate of Smith College and the medical department of the University of Michigan, and practiced in Flint up to the time of the war, when she taught obstetrics at the University of Michigan. She comes to the department from work in the famine districts of Russia.

✤

Mrs. Elsbeth H. Vaughan, R.N., Assistant Director of the Bureau of Child Hygiene and Public Health Nursing, is holding group meetings with public health nurses, giving nursing instruction in child hygiene and prenatal care. Five meetings were held in January in the Upper Peninsula at Marquette, Houghton, Ironwood, Iron River and Sault Ste. Marie.

✤

Five mother and baby health centers were organized during the month of January, and a total of 725 babies were examined (exclusive of Detroit and Grand Rapids) at Baby Centers, and in clinics and conferences conducted by department workers throughout the state.

✤

Lucy Dell Henry, University of Chicago, 1922, has been added to the staff of the Bureau of Laboratories as Senior Bacteriologist. Jean Chambers, B.S., Cornell, has left the Bureau of Laboratories to take a position as city bacteriologist at the Flint Department of Health.

Of the five water filter plants under construction in the state, two are expected to start operations in the spring, at Alpena and Detroit. The Detroit plant, which will be the largest water filter plant in the world, with a capacity of 360,000,000 gallons per day, will be completed in time for the meeting of the American Water Works Association in Detroit in the spring.

✤

New York

The Rockefeller Foundation has elected to its Board of Trustees Dr. Ray Lyman Wilbur, president of Stanford University, California, and William Allen White, writer and newspaper editor, of Emporia, Kansas; and to membership on its International Health Board, Dr. David L. Edsall, dean of the Harvard Medical School.

The Foundation has pledged to the endowment of the new educational program of the New York Academy of Medicine one and a quarter million dollars. This gift is in connection with the plans of the Academy of Medicine to be carried out in the new building which, as recently reported, is to be erected on Park Avenue. The income from the endowment given by the Foundation will make possible greatly increased library facilities and extended information and educational service for the medical profession of Greater New York and medical visitors to the city.

The establishment has been authorized of a system of fellowships in the biological sciences. These fellowships are to enable men and women of advanced training and unusual promise to continue important research in zoology, botany, psychiatry, and anthropology. They are comparable to those now being administered by the National Research Council, under Foundation funds, in physics and chemistry and in the medical sciences.

Leave of absence has been granted to President Vincent to enable him to accept appointment as an official delegate of the United States to the Fifth Pan American Congress to be held during March and April in Santiago, Chile. During his absence from the country the secretary, Edwin R. Embree, will perform the functions of the president.

Canandaigua, New Rochelle, Ossining, White Plains, and Glens Falls have the best records among up-State New York cities in respect to infant mortality in 1922. In Canandaigua the death rate of babies per 1,000 children born alive was only 38 last year. New Rochelle is second with a rate of 48, Ossining 52, White Plains 53, and Glens Falls 54. In the last five years New Rochelle has exactly halved its infant mortality rate, which dropped from 96 in 1918 to 79 in 1919, 65 in 1920, 61 in 1921, and 48 in 1922.

✤

George R. Bedinger, director of Health Service, New York County Chapter, American Red Cross, has just accepted appointment as executive director of the Public Charities Association of Pennsylvania. He took up his new duties on February 1, 1923.

✤

The Board of Directors of the New York County Chapter of the American Red Cross recently voted to transfer the activities of its Health Service Department, including the Health Information Bureau, to the New York Tuberculosis Association. The latter organization will continue the same type of service previously extended by the Red Cross.

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Ohio

On January 22d the Board of Health of the city of Cincinnati entertained the Academy of Medicine with a symposium on the work of the Health Department. Judging from the very complimentary remarks made in the discussion, this will be an annual event. The symposium included papers dealing with the various activities of the Health Department.

✤

Dr. John Emerson Monger, Columbus, has assumed his position as director of the State Department of Health, upon appointment by Governor Vic Donahey, who in a letter to Dr. Monger said: "I favor all activities which are essential for the protection of the health of the people in a common sense way." Dr. Monger succeeds Dr. H. H. Snively, who retired with the outgoing administration on January 8th.

He has the endorsement of leading members of the medical profession and public-

John E. Monger, M.D.

health workers of the State, who believe him to have the necessary qualifications of a successful administrator for the State Health Department. He was also endorsed by Dr. Allen W. Freeman, now professor of public health administration at Johns Hopkins, who was Commissioner of Health of Ohio when the Hughes-Griswold Health Act was passed.

Dr. Monger is a general practitioner, possesses the viewpoint of the family physician as well as the health official, and has been interested for years in the ideals, purposes and activities of medical organization. He was in active practice until 1917, when he became State Registrar of Vital Statistics, which position he held with credit for three years. He was a strong advocate of the Hughes-Griswold Health Act, which became effective in 1920, which has given to the State of Ohio an excellent machinery for conducting State health work upon the basis of county and State health units. The efficiency of local health work has been greatly extended as the result of this act, and it was but logical that a man who, among other qualifications, is also versed in sound legislative procedures, and who supported the act, should have been chosen by the Governor to fill the directorship of this important State department.

Dr. Monger is forty-five years of age, married, and has three children. He is a graduate of the Medical College of the University of Cincinnati (1902).

✣

Pennsylvania

On February 12th the Philadelphia Association for the Prevention and Relief of Heart Disease sponsored a musicale at the Metropolitan Opera House, the proceeds of which are to be used to build and equip a convalescent home for children with heart disease.

✣

Dr. Charles H. Miner, of Wilkes-Barre, has been named Commissioner of the State Department of Health by Governor Pinchot. Dr. Miner took charge of the department February 5th.

✣

The National Health Council Issues a List of Health Educational Films.—The National Health Council has prepared and published a comprehensive list of educational motion pictures on health subjects. Over 300 titles are included in the list, which gives, in addition to the title, the number of reels or the length, the name of the distributor, the rental or sale price, or both, and a brief note about the subject-matter of the film. The titles are classified under Child Hygiene, Personal Hygiene, Public Hygiene, Communicable Diseases, Other Diseases, Nursing, Anatomy and Physiology, etc., and Miscellaneous. The film list will be sent to any person or institution interested in motion pictures on health subjects, but it is intended especially for public-health workers connected with official and voluntary agencies. A charge of thirty-five cents per copy is made for the list in order to cover part of the cost of preparing it.

In addition to the collection of information concerning health films, the National Health Council, through the Health Films Committee, is making a study of existing films and is encouraging in numerous ways the production of better health films. The

Health Films Committee has already reviewed and analyzed six motion pictures on health subjects and has offered to the producers of these films suggestions as to how the films might be improved. Numerous other films are scheduled for study by especially selected sub-committees.

In general, it is the purpose of the Committee on Health Films of the National Health Council to encourage the wider use of the best health films and to stimulate the production of better motion pictures on health subjects.

The published list and other information may be secured by addressing the National Health Council, 370 Seventh Avenue, New York City.

✣

The Effects of the **Drought of 1921 on Water Supplies in England.**—Water obtained from springs and sources of poor quality was rendered fit for domestic use and carried in buckets. Some places conveyed water by rail.—*The Engineer*, London; *Eng. and Contr.*, 59:1, 268, Jan. 31, 1923.

✣

Chlorination and **Removal of Color from Water.**—Effects of insufficient and excessive doses of chlorine on tastes in water, removal of color by slow sand and rapid sand filtration discussed by Sir Alexander Houston.—*Mun. Eng., The San. Record*, London; *Eng. and Contr.*, 59:1, 280, Jan., 1923.

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CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the cooperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

April 2-7, American Congress on Internal Medicine, Philadelphia.

April 11-14, American Physical Education Association, Springfield, Mass.

April 18, Connecticut Public Health Assn. and Connecticut Assn. of Water-Works Engineers, Hartford, Conn.

April 23-27, National Congress of Mothers and Parent-Teachers Association, Louisville, Ky.

April 30, American Gastro-Enterological Association, Atlantic City, N. J.

May 1-3, Association of American Physicians, Atlantic City, N. J.

May 7-9, American Association of Engineers, Norfolk, Va.

May 10, Association of New England Food and Drugs Officials, Portsmouth, N. H.

May 10-12, American Laryngological, Rhinological and Otological Society, Atlantic City, N. J.

May 16-17, American Laryngological Association, Atlantic City, N. J.

May 16-23, National Conference of Social Workers, Washington, D. C.

May 21-23, American Gynecological Society, Hot Springs, Va.

May 21-23, American Urological Association, Rochester, Minn.

May 21-25, American Water Works Association, Detroit, Mich.

May 23-24, American Climatological and Clinical Association, Niagara Falls, Ontario.

May 28-31, American Society of Mechanical Engineers, Montreal, Canada.

June 1-2, American Neurological Association, Boston, Mass.

May 31-June 2, American Pediatric Society, French Lick, Ind.

June 7-9, American Orthopedic Association, Rochester, N. Y.

June 7-9, American Dermatological Association, Ann Arbor, Mich.

June 9, Eugenics Research Association, Cold Spring Harbor, N. Y.

June 12-14, Canadian Association for Prevention of Tuberculosis, Edmonton, Alb.

June 15-18, American Association for the Feeble Minded, Detroit, Mich.

June 19-22, American Psychiatric Association, Detroit, Mich.

June 20-23, National Tuberculosis Association, Santa Barbara, Cal.

June 21, National League of Nursing Education, Boston, Mass.

June 22-23, Radiological Society of North America, San Francisco, Cal.

June 25-26, Association of Medical Milk Commissioners, San Francisco, Cal.

June 25-29, American Medical Association, San Francisco, Cal.

June 26-28, American Association for Anesthetists, San Francisco, Cal.

July 1-7, National Education Association, San Francisco, Cal.

October 8-12, American Public Health Association, Boston, Mass.

OUT APRIL 15th

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